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EDITORIAL

THE astounding revitalization of Edgar Rice Burroughs which is taking place (and which we are pleased to be part of, with the publication of *Savage Pellucidar* in this issue), is already established as perhaps the publishing phenomenon of 1963. Paperback publishers are bringing out literally scores of ERB's Tarzan, Mars, Moon, Venus, and Pellucidar novels. Of course it remains to be seen how successful the books will be in that grim arena which separates the men from the boys—the newsstand and the bookstore. The question is, will the sense of excitement that Burroughs' work still generates be enough, for a new and more discerning generation of readers, to overcome his admitted awkwardness of style and outdated—or non-existent—science?

But there is another aspect to the Burroughs revival, we think. In many ways it is only a single aspect of what seems to be a revitalization of the whole field of science-fiction and science-fantasy. After many lean years, most of the magazines in the field are glowing with new health and rosy sales figures. Once

again new magazines are being planned and actually published. The increased stature of sf is also reflected in the following:

- *Playboy* Magazine's two-part interview with eight of the field's top writers;

- The full-length profile of Hugo Gernsback, founder of *AMAZING STORIES*, in *Life*;

- Plans to do more—and more adult sf on television;

- Plans to do more adult sf in films;

- A recent sf film "festival" at a New York City theatre, where an exhibition of two dozen sf movies drew record throngs over a two-week period.

Don't look now, folks, but we all may be making a comeback.

* * *

WITH avuncular pride—and also as an indication of the sf resurgence—we must report that Sam Moskowitz's new book, *Explorers of the Infinite* (reviewed in this issue on page 122) has chalked up a good early sales record. We're pleased for Sam, as well as for the fact that much of his book was originally written as articles for *AMAZING* and *FANTASTIC*.—N.L.



SAVAGE PELLUCIDAR

BY EDGAR RICE BURROUGHS

Not long after Edgar Rice Burroughs died in March, 1950, rumors were whispered that ERB had left in his massive office safe many unpublished manuscripts. For years this legend retained its currency among science-fantasy fans. And now—from Hulbert Burroughs, ERB's son—comes confirmation.

Among the newly-discovered, never-before-published Burroughs' stories was one that was seemingly pre-destined to appear in AMAZING. For, during February, March and April of 1942, we published three stories Bur-

roughs had written about the adventures of David Innes and Abner Perry in Pellucidar, the hollow world of primitive men and monsters inside the center of the Earth. Their titles were: Return to Pellucidar, Men of the Bronze Age, and Tiger Girl.

Now we are pleased and proud to present—even though it is 21 years later—the final segment of this Burroughs epic: Savage Pellucidar. Once again, join Innes and Perry, Ah-gilak and O-aa, and Dian the Beautiful as they adventure through the horizonless, timeless world.



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AS the John Tyler sailed through the nameless strait toward the Korsar Az in what seemed to David a fruitless search for the ship *Lo-har* and Hodon the Fleet One, a forgotten incident flashed into David's mind. As he had drifted across the strait in the balloon that Abner Perry had built for him that he might prosecute his search for Dian the Beautiful, he had seen, far below, a canoe with two occupants moving with the current toward the Korsar Az. And now, recalling what one of the Xexots had told him of seeing Dian and Gamba, the former king of Lolo-lolo, escaping in a canoe, he was certain that it must have been Dian and Gamba whom he had seen. So now he was as anxious as O-aa to sail on into the Korsar Az.

Ah-gilak, the little old man from Cape Cod who could not recall his name but knew that it was not Dolly Dorcas, didn't care where he sailed the ship he had designed and now skippered. He was just content to sail it, a small version of the great clipper ship he had dreamed of building as soon as he got back to Cape Cod.

Of course Abner Perry was more than anxious to prosecute the search for Dian, since it had been through his carelessness

that the balloon had escaped and borne her away. Ja and Jav and Ko and the other Mezops of the crew, being born to the sea, were happy in this, to them, wonderful ship. Ghak the Hairy One, king of Sari, who commanded the two hundred warriors aboard, would have gone to the fiery sea of Molop Az for either David or Dian. The two hundred warriors, while loyal and valiant, were mostly unhappy. They are hill people, the sea is not their element, and most of them were often sick.

On the *Lo-har*, Hodon and Dian decided to cruise about the Korsar Az for a while before giving up the search for O-aa, whom they had about given up for lost. Then they would return again to Sari.

The Korsar Az is a great ocean extending, roughly, two thousand miles from east to west and three thousand five hundred miles from north to south. It is an uncharted wilderness of unknown waters, and all but a short distance of its enormous shoreline a terra incognita to the crews of the *Lo-har* and the John Tyler, most of whom thought that its waters extended to the ends of the world and were bordered by lands inhabited by fierce enemies and roved by terrifying beasts, in all but the first of which conceits they were eminently correct.

LEAVING Tandar, the island upon which he had found Dian, Hodon cruised to the south, while the John Tyler, entering the great sea from the nameless strait, turned her prow toward the north. Thus, fate separated them farther and farther.

Usually within sight of land, the John Tyler cruised in a north-easterly direction along the great peninsula upon the opposite side of which lie most of the kingdoms of the Empire of Pellucidar. For thirteen or fourteen hundred miles the ship held this course, while Ghak's two hundred sturdy warriors, sick and hating the sea, became more and more unhappy and discontented until they were close upon the verge of mutiny.

They were at heart loyal to Ghak and David; but they were men of the stone age, rugged individualists unaccustomed to discipline. Finally they came to Ghak in a body and demanded that the ship turn back and head for home.

Ghak and David listened to them, Ghak with deep sympathy, for he, too, was sick of the sea and longed to feel the solid earth beneath his feet once more. And David listened with understanding and a plan. He spread a crude map before them.

"We are here," he said, pointing, "opposite the narrowest

part of the peninsula." He moved his finger in a southeasterly direction. "Here is Sari. Between us and Sari lie seven hundred miles of probably rugged country inhabited by savage tribes and overrun by fierce beasts. You would have to fight your way for all the seven hundred miles." He ran his finger back along the coast and through the nameless strait and then up along the opposite shore of the peninsula to Sari. "The John Tyler is a safe and seaworthy ship," he said. "If you remain aboard her, you may be sick and uncomfortable at times, but you will reach Sari in safety. If you wish, we will land you here; or you may remain aboard. If you stay with the ship, there must be no more grumbling, and you must obey orders. Which do you wish to do?"

"How far is it back to Sari by sea?" asked one of the warriors.

"This is, of course, a crude map," said David, "and we may only approximate correct distances; but I should say that by sea the distance to Sari is around five thousand miles."

"And only seven hundred miles by land," said the man.

"About that. It may be more, it may be less."

"If it were seven hundred miles by sea and five thousand by land," spoke up another warrior, "and I had to fight for ev-

ery mile, I'd choose to go by land."

As one man, the two hundred cheered; and that settled the matter.

"Well, dod-burn my hide!" grumbled Ah-gilak. "Of all the gol-durned idjits I almost nearly ever seen! 'Druther hoof it fer seven hundred miles than ride home in style an' comfort on the sweetest ship ever sailed these dod-blasted seas. Ain't got no more sense 'n a white pine dog with a poplar tail. Howsumever, good riddance, says I. There'll be more victuals for the rest of us, an' plenty water."

"Then everybody's happy," said David, smiling.

At the point they chose to land the Sarian warriors, there was a narrow beach at the foot of cliffs which extended in both directions as far as they could see. The lead showed no bottom at sixteen fathoms four hundred yards off shore. Closer than that Ahgilak would not take his ship.

"Too gol-durned close now," he said, "but what wind there is is right."

Standing on and off with a light breeze and a calm sea, the boats were lowered and the first contingent was put ashore. David, Abner Perry, Ghak, and O-aa were standing together watching them disembark.

"You will accompany them, Ghak?" asked David.

"I will do whatever you wish," replied the king of Sari.

"Your place is with them," said David; "and if you go with them, you'll be back in Sari much sooner than we shall by sea."

"Why don't we all go with them, then?" suggested Perry.

"I have been thinking the same thing," said David, "but for myself. Not you. It would be too tough a trek for you, Abner. Don't forget that you must be well over ninety by this time."

Perry bridled. "Stuff and nonsense!" he exclaimed. "I can keep up with the best of you. And don't you forget, David, that if I am over ninety, you are over fifty. I'm going along, and that settles it. I must get back to Sari. I have important things to do."

"You will be much more comfortable aboard the John Tyler," coaxed David. "And what have you so important to do, that can't wait in a world where time stands eternally still?"

"I have in mind to invent a steam locomotive and build a railway," said Perry. "I also wish to invent a camera. There is much to be done, David."

"Why a camera?" asked David. "You can't kill anyone with a camera."

Perry looked hurt. The man

who had brought gunpowder, muskets, cannon, and steel for swords and spears and knives to this stone age world was inherently the sweetest and kindest of men. But he just couldn't help "inventing".

"Be that as it may, David," he said with dignity, "I am going with Ghak," and David knew that that was that.

"How about you, O-aa?" asked David. "With two hundred warriors fully armed with Perry's appurtenances of civilization, I am sure that we can make the journey with safety; and you can be back in Kali with your own people far sooner than by making the long trip by sea."

"Hodon is somewhere on the Korsar Az searching for me, I am sure," replied O-aa, "so I shall stay with the John Tyler. I should much rather go with you than remain with the little old man whose name is not Dolly Dorcas and whom I do not like, but by so doing I might miss Hodon."

"Why do you call him the little man whose name is not Dolly Dorcas, and why do you dislike him?" asked Perry.

"He has forgotten his own name. He had none. So I called him Dolly Dorcas. I thought that was his name, but it was the name of the ship he was on that was wrecked. So he was always saying, 'My name is not Dolly

Dorcas', until we gave him the name Ah-gilak. And I do not like him, because he eats people. He wanted to eat me. He ate the men who were shipwrecked with him. He was even going to start eating himself. He has told us these things. He is an evil old man. But I shall go with him, because I wish to find my Hodon."

"Gracious me!" exclaimed Perry. "I had no idea Ah-gilak was such a terrible person."

"He is," said O-aa, "but he had better leave me alone, or my thirteen brothers will kill him."

II

AS the John Tyler drew away from shore, little O-aa leaned on the rail and watched the last of the Sari warriors clamber up the cliff and disappear in the jungle-like growth which surmounted it. A moment later he heard savage cries floating out over the water, and then the loud reports of muskets and the screams of wounded men.

"Men do not have to wait long for trouble on land," said Ko, the Mezop Third Mate, who leaned against the rail at her side. "It is well that you decided to return by sea, little one."

O-aa shot a quick glance at him. She did not like the tone of his voice when he called her lit-

tle one. "My people can take care of themselves," she said. "If necessary they will kill all the men between here and Sari. And I can take care of myself, too," she added.

"You will not have to take care of yourself," said Ko. "I will take care of you."

"You will mind your own business," snapped O-aa.

Ko grinned. Like nearly all the red Mezops he was handsome, and like all handsome men he thought that he had a way with the women and was irresistible. "It is a long way to Sari," he said, "and we shall be much together; so let us be friends, little one."

"We shall not be much together, we shall not be friends, and don't call me little one. I do not like you, red man." Little O-aa's eyes snapped.

Ko continued to grin. "You will learn to like me—little one," he said. O-aa slapped him full in the face. Ko's grin vanished, to be replaced by an ugly snarl. "I'll teach you," he growled, reaching for her.

O-aa drew the long, slim steel dagger David had given her after she came aboard the John Tyler, and then a thin, cracked voice cried, "Avast there, you swabs! What goes on?" It was Ah-gilak the skipper.

"This she-tarag was going to knife me," said Ko.

"That's only part of it," said O-aa. "If he ever lays a hand on me I'll carve his heart out."

Ja, attracted by the controversy, crossed the deck to them in time to hear Ah-gilak say, "She is a bad one. She needs a lesson."

"You had better not try to give me a lesson, eater of men," snapped O-aa, "unless you want your old belly ripped open."

"What is this all about, O-aa?" asked Ja.

"This," said O-aa, pointing at Ko, "spoke to me as no one but Hodon may speak to me. And he called me little one—me, the daughter of Oose, King of Kali. And when I slapped him, he would have seized me—had I not had my knife."

Ja turned on Ko. "You will leave the girl alone," he said. Ko scowled but said nothing, for Ja is king of the Mezops of Anoroc Island, one whom it is well to obey. Ko turned and walked away.

"Dod-burn it!" exclaimed Ah-gilak. "They's always trouble when you got a woman aboard. I never did like shippin' a woman. I got me a good mind to set her ashore."

"You'll do nothing of the sort," said Ja.

"I'm skipper of this here ship," retorted Ah-gilak. "I can put her ashore if I've a mind to."

"You talk too much, old man," said Ja, and walked away.

"You gol-durned red Indian," grumbled Ah-gilak. "That's insubordination. Tarnation! it's mutiny, by gum. I'll clap you in irons the fust thing you know," but he was careful to see that Ja was out of ear shot before he voiced his anger and made his threats, for now, except for himself, all the officers and crew of the John Tyler were Mezops and Ja was their king.

THE John Tyler beat back along the coast toward the nameless strait; and every waking moment O-aa scanned the surface of the great sea that curved upward, horizonless, to merge in the distant haze with the vault of the heavens. But no sign of another ship rewarded her ceaseless vigil. There was life, the terrible marine life of this young world; but no ship bearing Hodon.

O-aa was very lonely. The Mezops, with the exception of Ko, were not unfriendly; but they are a taciturn people. And, further, she had little in common with them that might have promoted conversation. And she hated the sea, and she was afraid of it. She might cope with enemies among men, but she could not cope with the sea. She had begun to regret that she had not gone overland to Sari with David.

Time dragged heavily. The ship seemed to stand still. There were adverse winds; and once, when she came on deck after sleeping, they were becalmed and a dense fog lay upon the water. O-aa could not see the length of the ship. She could see no ocean. There was only the lapping of little waves against the hull and the gentle movement of the ship to indicate that she was not floating off into space in this new element. It was a little frightening.

Every sail was set and flapping idly. A figure materialized out of the fog. O-aa saw that it was the little old man, and the little old man saw that the figure by the rail was O-aa. He glanced around. There was no one else in sight. He came closer.

"You are a hoodoo," he said. "You brought bad winds. Now you have brought calm and fog. As long as you are aboard we'll have bad luck." He edged closer. O-aa guessed what was in his mind. She whipped out her dagger.

"Go away, eater of men," she said. "You are just one step from death."

Ah-gilak stopped. "Gol-durn it, girl," he protested, "I ain't goin' to hurt you."

"At least for once you have spoken the truth, evil old man," said O-aa. "You are not going to hurt me. Not while I have my

knife. All that you intended to do was to throw me overboard."

"Of all the dog-gasted foolishness I ever heard, that there takes the cake, as the feller said."

"Of all the dod-gasted liars," O-aa mimicked, "you take the cake, as the feller said. Now go away and leave me alone." O-aa made a mental note to ask someone what the cake was. There is no cake in the stone age and no word for it.

Ah-gilak walked forward and was lost in the fog. O-aa stood now with her back against the rail, that no one might sneak up on her from behind. She knew that she had two enemies aboard—Ko and Ah-gilak. She must be always on the alert. The outlook was not pleasant. The voyage would be very long, and during it there would be many opportunities for one or the other of them to harm her.

Again she berated herself for not having accompanied David and his party. The sea was not her element. She longed for the feel of solid ground beneath her feet. Even the countless dangers of that savage world seemed less menacing than this vile old man who bragged of his cannibalism. She had seen men look at her with hunger in their eyes, but the hunger look in the watery old eyes of Ah-gilak was different. It connoted hunger for food;

and it frightened her more even than would have the blazing eyes of some terrible carnivore, for it was unclean, repulsive.

A LITTLE breeze bellied the sails of the John Tyler. It sent the fog swirling about the deck. Now the ship moved again. Looking across the deck, O-aa saw something looming close alongside the John Tyler. It was land—a great, green clad cliff half hid by the swirling fog. She heard Ah-gilak screaming orders. She heard the deep voice of Ja directing the work of the sailors—a calm, unruffled voice.

O-aa ran across the deck to the opposite rail. The great cliff towered high above, lost in the fog. It was scarcely a hundred feet away. At the waterline was a narrow beach that could scarcely be dignified by the name of beach. It was little more than a foothold at the base of this vertical escarpment.

Here was land—beloved land! Its call was irresistible. O-aa stepped to the top of the rail and dove into the sea. She struck out strongly for the little ledge. A kind Providence protected her. No voracious denizen of this swarming sea attacked her, and she reached her goal safely.

As she drew herself up onto the ledge, the fog closed in again, and the John Tyler disappeared from view. But she could still

hear the voices of Ah-gilak and Ja.

O-aa took stock of her situation. If the tide were out, then the ledge would be submerged at high tide. She examined the face of the cliff in her immediate vicinity; and concluded that the tide was out, for she could see the marks of high tides far above her head.

Because of the fog, she could not see far either to the right or to the left or above her. To most, such a situation would have been appalling; but the people of Kali are cliff dwellers. And O-aa, being a Kalian, had spent all of her life scaling cliffs. She had found that there are few cliffs that offer no footholds. This is especially true of cliffs the faces of which support vegetation, and this cliff was clothed in green.

O-aa wished that the fog would go away before the tide came in. She would have liked to examine the cliff more carefully before starting the ascent. She could no longer hear voices aboard the John Tyler. O-aa was alone in a strange world that contained no other living thing. A tiny little world encompassed by fog.

A wave rolled in and lapped her ankles, O-aa looked down. The tide was coming in. Something else was coming in, also. A huge reptile with formidable jaws was swimming toward her,

and it was eyeing her quite as hungrily as had Ah-gilak. It was a nameless thing to O-aa, this forty foot monster. It would have advantaged little O-aa nothing to have known that this creature that was intent on reaching up and dragging her down into the sea was Tylosaurus, one of the rulers of the Cretaceous seas of the outer crust, eons ago.

III

AH-GILAK had seen the green cliff loom close alongside the John Tyler at the same moment as had O-aa, but it connoted something very different to the ancient skipper than to O-aa. To the one it meant disaster, to the other escape. And each reacted in his own way. Ah-gilak screamed orders and O-aa dived overboard.

With the lightly freshening breeze, the ship hauled away from danger, at least from the imminent threat of that particular cliff. But who knew what lay just ahead in the fog?

Again the wind died, the sails hung limp, the fog closed in tighter than before. The tide and a strong current bore the helpless ship on. But where? Abner Perry's crude compass did 180s and 360s, as the current and the tide turned the John Tyler slowly this way and that.

"She ain't nuthin' but a dod-

burned derelict," groaned Ah-gilak, "jest driftin' around. It all comes from shippin' a woman, dod-burn 'em. If we're driftin' to sea, we're all right. If we're driftin' t'other way, she'll go ashore. Gad an' Gabriel! I'd rather pitch a whole slew o' women overboard than lose a sweet ship like the John Tyler."

"Shut up!" said Ja. "You talk too much. Listen!"

With a palm, Ah-gilak cupped an ear. "I don't hear nuthin'," he said.

"You're deaf, old man," said Ja.

"I can hear as good as the next feller, as the feller said," remonstrated Ah-gilak.

"Then you can hear the surf that I hear," said Ja.

"Surf?" screamed Ah-gilak. "Where? How far?"

"There," said Ja, pointing. "And close."

* * *

The Lo-har was fogbound. She had been cruising northeast after a futile search in the other direction. Hodon was loath to give up and admit that O-aa was hopelessly lost to him. Dian the Beautiful was apathetic. She knew that David might have been borne almost anywhere by the balloon that had carried him in search of her, and that she stood as good a chance of finding him while searching for O-aa as in any other way. But she was re-

signed to the fact that she would never see him again; so she encouraged Hodon to search for his O-aa.

Raj and the other Mezops were content just to sail. They loved the sea. Gamba, the Xexot, who had been a king, did not love the sea. It frightened him, but then Gamba was afraid of many things. He was not of the stuff of which kings are supposed to be made. And he was always whining and finding fault. Hodon would long since have pitched him overboard had not Dian interceded in his behalf.

"How many more sleeps before we reach your country?" he asked Dian.

"Many," she replied.

"I have already lost count of the number of times I have slept since I came aboard this thing you call a ship. We should be close to your country by now. The world is not so large that one can travel for so many sleeps without seeing it all."

"Pellucidar is very large," said Dian. "You might travel many thousands of sleeps and yet see but little of it. Furthermore, we have not been travelling toward Sari."

"What?" shrieked Gamba. "Not travelling toward your country?"

"Hodon has been searching for his mate."

"He did not find her," said

Gamba; "so I suppose that we are now travelling toward Sari."

"No," said Dian. "We are getting farther and farther from Sari, at least by water."

"Make him turn around, and sail toward Sari," demanded Gamba. "I, Gamba the King, do not like the ocean nor the ship."

Dian smiled. "King of what?" she asked.

"I shall probably be king of Sari when we get there," said Gamba.

"Well, take my advice and don't tell Ghak the Hairy One," said Dian.

"Why not? Who is the Ghak the Hairy One?"

"He is king of Sari," explained Dian, "and he is a very large person and very fierce when he is crossed."

"I am not afraid of him," said Gamba.

Again Dian smiled.

* * *

O-AA did not scream as the great jaws of the reptile opened wide to seize her, nor did she faint. Had our foremothers of the stone age wasted time screaming and fainting, when danger threatened, the human race would have died a-borning. And perhaps the world would have been a better, kinder place to live for all the other animals who do not constantly make war upon one another as do men.

Like a human fly, O-aa scam-

bled up the face of the cliff a few feet; then she looked back and made a face at Tylosaurus, after which she considered carefully her new position. Because of the fog, she could see but a few yards in any direction. How high the cliff she could not know. The greenery which covered it consisted of lichen and stout liana-like vines which depended from above. As there was no earth on this vertical rock in which plant life might take root, it was obvious to O-aa that the lianas were rooted in earth at the top of the cliff. She examined them carefully. Not only were they, in themselves, tough and sturdy; but the aerial tendrils with which the vines clung to the face of the cliff added still greater strength and permanency. Making use of this natural ladder, O-aa ascended.

Some fifty feet above the surface of the sea she came to the mouth of a large cave from which emanated a foul stench—the stink of putrid carrion—and as she drew herself up and peered over the sill of the opening, three hissing, screaming little horrors rushed forward to attack her. O-aa recognized them as the young of the thipdar. Paleontologists would have classified them as pterodactyls of the Lias, but they would have been surprised at the enormous size to which these flying reptiles

grow in the Inner World. A wing span of twenty feet is only average. They are one of the most dreaded of Pellucidars many voracious carnivores.

The three that attacked O-aa were about the size of turkeys, and they came for her with distended jaws. Clinging to her support with one hand, O-aa whipped out her knife, and beheaded the leader of the attack. But the others came on, their little brains, reacting only to the urge of hunger, had no room for fear.

The girl would gladly have retreated, but the insensate little terrors gave her no respite. Squawking and hissing, they hurled themselves upon her. She struck a terrific blow at one of them, and missed. The momentum of the blow carried her blade against the vine to which she clung, severing it just above her left hand; and O-aa toppled backward.

Fifty feet below her lay the ocean and, perhaps, Tylosaurus and Death. We, whose reactions have been slowed down by generations of civilization and soft, protected living, would doubtless have fallen to the ocean and, perhaps, Tylosaurus and Death. But not O-aa. Simultaneously, she transferred the knife to her mouth, dropped the severed vine and grabbed for new support with both hands. She found it

and held. "Whe-e-oo!" breathed O-aa.

It had been a close call. She started up again, but this time she detoured around the cave of the thipdars. She had much to be thankful for, including the fog. No adult thipdar had been in the cave, nor need she fear the return of one as long as the fog held.

A hundred feet above the sea she found the summit of the vertical cliff. From here, the mountain sloped upward at an angle of about forty-five degrees. Easy going for O-aa this. Practically level ground. There were trees. They kept looming up out of the fog as she advanced. Trees are beloved of Pellucidarians. Beneath their branches one finds sanctuary from flying reptiles. Among their branches, sanctuary from the great earth bound carnivores.

Now that she had found trees, O-aa had no further need of fog. She wished that it would lift. She was getting as sick of the fog as she had been of the sea. But she knew that the fog was better than the sea. It would go away some time. The sea, never.

She climbed upward, alert, listening, sniffing the air. And presently she emerged from the fog into the bright sunlight of Pellucidar's eternal noon. The scene was beautiful. The mountain continued to rise gently to-

ward its peak. Splendid trees dotted its slope. Green grass grew lush, starred with many flowers; and below her, shining bright in the sun, the fog rolled, a silent, silver sea.

By the time she reached the summit, the fog had disappeared as miraculously as it had come. O-aa looked in all directions, and her heart sank. In all directions she saw water. This single mountain rose from the depths of the ocean to form a small island. A mile away, she could see the mainland. But that mile of water seemed to the little cave girl of the mountains as effectual a barrier to escape as would a hundred miles of turbulent sea.

And then O-aa saw something else—something that sent her heart into a real nose dive. Sneaking toward her was a jallok, the fierce wild dog of Pellucidar. And there was no tree nearby.

IV

THE John Tyler went ashore and the surf pounded her against the rocks. Ah-gilak burst into tears as he envisioned the breaking up of his beloved clipper ship. Then he cursed fate and the fog and the calm, but especially he cursed O-aa.

"Shut up, old man!" commanded Ja. He gave orders that the boats be lowered on the off-shore side of the ship. The pow-

erful Mezops manned them and held them from the ship's side with their spears as the rollers came in.

Ja and Jav and Ko checked off the men to see that all were present. "Where is the girl?" asked Ja. No one had seen her, and Ja sent men to search the ship for her. They returned to report that she was not on board, and Ja turned fierce eyes on Ah-gilak.

"What did you do with her, old man?" demanded Ja.

"I did nothing to her."

"You wanted to put her ashore. I think you threw her overboard."

"We do not need him any more," said Jav. "I think we should kill him."

"No! No!" screamed Ah-gilak. "I did not throw the girl overboard. I do not know what became of her. Do not kill me. I am just a poor old man who would not harm any one."

"We all know that you are a liar," said Ja, "so nothing you may say makes any difference. However, as no one saw you throw the girl overboard I shall give you the benefit of the doubt and not kill you. Instead, I shall leave you aboard the ship."

"But it will break up and I shall be drowned," pleaded Ah-gilak.

"That is your affair, not mine," said Ja. So the Mezops

abandoned the wreck of the John Tyler, leaving Ah-gilak behind.

The Mezops reached the shore in safety and shortly after, the fog lifted. A strong wind sprang up, blowing from the land toward the sea. The Mezops saw the sails of the John Tyler fill.

"The old man is in a bad way," said Jav.

"Look!" cried Ko. "The ship is moving out to sea."

"The tide came in and floated her," said Ja. "Maybe we should not have abandoned her so soon. I do not like the land."

"Perhaps we could overhaul her in the boats," suggested one.

So they manned the boats and paddled after the John Tyler. Ah-gilak saw them coming and guessed their intention. Impelled by two urges—fear of the Mezops and a desire for revenge—he took the wheel and steered a course that took full advantage of the wind; and the John Tyler picked up speed and showed a pretty pair of heels to the sweating Mezops, who soon gave up the chase and started back toward shore.

"The old son of a sithic!" exclaimed Jav. The sithic is a toad-like reptile.

* * *

THE jalok is a big, shaggy hyaenodon, with a body as large as a leopard's but with longer legs. Jaloks usually hunt

in packs, and not even the largest and fiercest of animals is safe from attack. They are without fear, and they are always hungry. O-aa knew all about jaloks, and she wished that she was up a tree—literally. She certainly was, figuratively. She was also behind the eight ball, but O-aa knew nothing of eight balls. To be behind the eight ball and up a tree at the same time is very bad business.

O-aa drew her knife and waited. The jalok lay down and cradled his powerful jaws on his outstretched front legs, and eyed O-aa. This surprised the girl. She had expected the beast to rush her. The animal looked like a big, shaggy dog; but O-aa was not deceived by appearances. She knew that sometimes jaloks were tamed, but they were never domesticated. This one was probably not hungry, and was waiting until he was.

I can't stay here forever, just waiting to be eaten, thought O-aa; so she started along slowly in the direction she had been going. The jalok got up and followed her.

Below her stretched a gentle declivity down to a narrow coastal plain. A little stream, starting from some place at her left, wound down the mountainside. It was joined by other little streams to form a little river that meandered across the plain

down to the sea. It was all a scene of exquisite beauty—a little gem set in an azure sea. But for the moment it was all lost on O-aa as she glanced behind and saw the jalok following her.

If I climb a tree, thought O-aa, the jalok will lie down beneath it until I come down or fall out. O-aa knew her jaloks; so she kept on walking.

She had descended about a half a mile when she heard a savage growl ahead and to her left. As she looked, a codon broke from the cover of some tall grass and charged her. O-aa knew that she was lost, but she held her knife in readiness and awaited her end. Then something flashed by her. It was the jalok. He met the codon, a huge timber wolf, long extinct upon the outer crust, at the moment that it leaped for O-aa.

Then followed what bade fair to be a battle royal between these two savage, powerful beasts; and O-aa took advantage of their preoccupation to make good her escape. As she ran down the mountainside, the roars and growls of the battling beasts filled her ears. But not for long. Suddenly they stopped. O-aa glanced back, and again her heart sank. The jalok was coming toward her at a run. Behind him, she could see the still form of the codon lying where it had died.

O-AA stood still. The end was inevitable. She might as well face it now. The jalok stopped a few yards from her; then it moved toward her again *wagging its tail!* That has meant the same thing in the dog family from the Cretaceous age to the present day, on the outer crust or in the Inner World at the earth's core.

O-aa sheathed her knife and waited. The jalok came close and looked up into her face, and O-aa placed a hand upon its head and scratched it behind an ear. The great beast licked her hand, and when O-aa started down toward the sea again, it walked at her side, brushing against her. Not since she had lost Hodon had O-aa felt so safe. She tangled her fingers in the shaggy collar that ringed the jalok's neck, as though she would never let him go again.

Until this moment she had not realized how friendless and alone she had been since she had said goodby to David and Abner Perry and Ghak. But now she had both a friend and a protector. O-aa was almost happy.

As they neared the beach, the jalok moved toward the right; and O-aa followed him. He led her to a little cove. Here she saw an outrigger canoe drawn up on the beach above high water. The jalok stopped beside it and looked up at her. In the canoe

were the weapons and the loin-cloth of a man. And in these things, O-aa read a story. She could see by the general appearance of the articles in the canoe that they had lain untouched for some time. She knew that a man did not go naked and unarmed far from his weapons. And thus she reconstructed the story: A warrior had paddled from the mainland with his jalok to hunt, perhaps. He had gone into the sea to bathe, and had been seized and devoured by one of the innumerable voracious creatures which swarm in the waters of the Korsar Az. Or perhaps a thipdar had swooped down and seized him. At any rate, she was confident that he had gone never to return; and she had fallen heir to his weapons, his canoe, and his jalok. But there remained a mile of terrifying water between herself and the mainland!

She looked across to the farther shore just in time to see the John Tyler put to sea. She could not know that the ship bore only Ah-gilak. The others, far down the coast, were too far away for her to see them. She looked at the canoe and out again across the water. The jalok lay at her feet. She ruffled his shaggy mane with a sandalled foot, and he looked up at her and bared his fangs in a canine grin—terrible fangs set in mighty jaws

that could tear her to pieces in a moment.

O-aa sat down on the ground beside the jalok and tried to plan for the future. What she was really trying to do was raise her courage to a point that would permit her to launch the canoe and paddle across that fearsome mile. Every time it reached the sticking point she would look out and see a terrible head or a dorsal fin break the surface of the sea. Then her courage would do a nose dive. And when she realized that the wind was against her, she breathed a sigh of relief for so excellent an excuse to delay her departure.

She examined the contents of the canoe more closely. She saw a stone head and a wooden shaft, a tomahawk with a well shaped stone head and a wooden haft, a bow, a quiver of arrows, two paddles, a pole six or seven feet long, a woven fibre mat, and some cordage of braided grasses. These latter articles suggested something to O-aa that would never have entered her head before she began her adventures on that unfamiliar medium which rolled and tossed in illimitable vastness to form the Sojar Az and the Korsar Az. O-aa had learned much that was no part of the education of a cave girl from Kali.

She examined further and found a hole in a thwart and be-

neath it a corresponding receptacle in the bottom of the canoe. Now she knew what the pole was for and the fibre mat and the cordage. All she had to do, she decided, was wait for a favorable wind. That would be much better than paddling; and as she intended to wait for a strong wind, it would result in a much shorter passage, which would cut down the odds that were always against the survival of any who put to sea in Pellucidar.

Her doom postponed until the wind changed, O-aa realized that she was hungry. She took the spear, the quiver of arrows, and the bow and set forth to hunt. The jalok accompanied her.

V

AH-GILAK lashed the wheel and went below to ascertain the damage that had resulted from the ship's pounding on the rocks. He found her sound as a roach, for the Sarians had selected their lumber well and built well.

Returning to the wheel, he took stock of his situation. It did not appear too rosy. Twenty or thirty men were required to man the John Tyler. Obviously, one little old man could not. With the wind he had now, he could hold on as long as there was ocean ahead. He might even maneuver the ship a little, for

Ah-gilak had spent a lifetime under sail. But a storm would be his undoing.

Without stars or moon, with a stationary sun, he could not navigate even had he had the necessary instruments and a dependable chart, none of which he had. Nor could he have navigated the nameless strait could he have found it. Ah-gilak was in a bad way, and he knew it; so he decided to beach the John Tyler at the earliest opportunity and take his chances on land.

* * *

O-aa followed the little river. She moved warily, taking advantage of cover—trees, tall grasses, underbrush. She moved silently, as silently as the great beast at her side. Her left hand grasped her bow and several arrows, another arrow was fitted to the bow and drawn part way back, presenting an analogy to a loaded .45 with a full clip in the magazine and the safety off.

Suddenly three horses broke cover from nearby underbrush, and in quick succession two arrows brought two of them down. O-aa rushed in and finished them with her knife, while the jalok pursued and dragged down the third.

O-aa picked up the two horses she had shot and waited while the jalok devoured his kill; then they started back toward the canoe. The girl knew her prey as

orthopi; but you would have recognized them as Hyracotherii of the Lower Eocene, the early ancestors of Seabiscuit and Whirlaway, little creatures about the size of foxes.

The girl gave one of the orthopi to the jalok; then she made fire and cooked much of the other for herself. Her hunger satisfied, she lay down beneath a tree and slept.

When she awoke, she looked around for the jalok; but he was nowhere to be seen. O-aa was swept by a wave of loneliness. She had been heartened by the promise of companionship and protection which the savage beast had offered. Suddenly the future looked very black. In her fit of despondency, the shore of the mainland seemed to have receded; and she peopled the world with terrifying menaces, which was wholly superfluous, as Nature had already attended to that.

She gave herself up to self-pity for only a short time; then she lifted her chin and braced her shoulders and was the self-sufficient cave girl of Kali once more. She looked out across the water, and realized that the wind had changed while she slept and was blowing strongly toward the mainland.

Going to the canoe, she stepped the mast and rigged the sail to the best of her ability,

which was not mean; for O-aa was a highly intelligent young person, observant and with a retentive memory. She tugged on the canoe and found that she could move it, but before she dragged it into the sea she decided to look around once more for the jalok.

She was glad that she had, for she saw him coming down toward her carrying something on his back. When he was closer, she saw that it was the carcass of a small deer which he had thrown across his shoulders, still holding to it with his jaws—carrying it as the African lion has been known to carry its prey.

He came up to her, wagging his tail, and laid his kill at her feet. O-aa was so glad to see him that she dropped to her knees and put both arms around his shaggy collar and hugged him. Doubtless, this was something new in the jalok's life; but he seemed to understand and like it, for he bared his fangs in a grin and licked the girl's face.

Now O-aa was faced with a problem. If she waited to cook some of the deer and eat, the wind might change. On the other hand she couldn't bear to abandon so much good meat. The alternative was to take it with her, but would the jalok let her take the carcass away from him? She determined to experiment. Seizing the deer, she started to

drag it down toward the water's edge. The jalok watched her; then, apparently getting the idea, he took hold of it and helped her. O-aa realized what she had become almost convinced of, that here was a well trained hunting animal that had worked with and for his dead master.

Having deposited the deer on the beach, O-aa dragged the canoe down to the water. It taxed her strength, but at last she was rewarded by seeing it afloat. Then she carried the deer to it.

She had no name for the jalok, and did not know how to call him to get into the canoe. She did not need to know. As she climbed over the gunwale, he leaped aboard and took his station in the bow.

The stern of the canoe was still resting on the sandy bottom, but the sail had filled and was tugging to free it. A few vigorous shoves with a paddle freed the little craft, and O-aa was on her way across the frightful water.

STEERING with a paddle, O-aa kept the nose of her craft pointed at a spot on the opposite shore and the wind always directly astern. As the wind freshened, the canoe fairly raced through the water. This was much better than paddling and much faster. O-aa could imagine that this would be a delightful

way to travel were it not for the innumerable horrors that infested the ocean and the terrific storms which occasionally whipped it into fury.

Constantly searching the surface of the sea for signs of danger, the girl glanced back and saw the long neck and small head of a tandoraz, which, in Pellucidarian, means mammoth of the sea. The reptile was following the canoe and gaining on it slowly. O-aa well knew what was in that tiny brain. She also knew that the best that she could do with any of her weapons was to infuriate it.

Had she known a god, she would have prayed to him for more wind; but, knowing no god, she had to depend entirely on her own resources. Suddenly her eyes fell upon the deer. If she couldn't destroy the tandoraz, perhaps she might escape it if she could but delay it.

The shore was not far away now, and the canoe was racing through the water almost as fast as the reptile was swimming; although O-aa was none too sure that the creature was exerting itself anywhere near to the limit of its powers. Nor was it.

With the steel knife that David had given her she ripped open the belly of the carcass and eviscerated it. Glancing back, she saw that the tandoraz was almost upon her. The cold, rep-

tilian eyes glared down upon her. The snake-like jaws gaped wide.

Dragging the viscera to the stern of the canoe, she dropped it overboard directly in front of the hissing creature. The next couple of seconds were an eternity. Would the thing take the bait? Would the stupid mind in its tiny brain be thus easily diverted from the fixed idea that it had been following?

The odor of fresh animal matter and blood turned the scale in O-aa's favor. The neck arched and the head struck viciously at the viscera. As the tandoraz stopped to tear at this luscious tid-bit, the canoe drew away. The distance widened. The shore was quite close now, but there was a heavy surf pounding on a sandy beach.

O-aa had resumed the paddle and was steering once more. Her heart was filled with rejoicing. Her escape from death had been all too close, and by comparison the menace of the heavy surf seemed trivial. She looked back at the tandoraz, and her heart missed a beat. Evidently sensing that its prey was escaping, it was coming through the water at terrific speed in pursuit.

O-aa glanced forward again. She was confident that the canoe would reach the surf before the tandoraz could overhaul it. But what then? She didn't believe that the canoe could withstand

what seemed to her the mountainous waves that broke upon the shore and rolled far up the beach. The reptile would be upon them as they were thrown into the water. It could not get them all. She could only hope that the thing would seize upon the carcass of the deer rather than upon her or the jalok which still sat in the bow of the canoe all unconscious of the tragedy of the past few minutes.

Again the "mammoth of the sea" loomed above her. The canoe was caught by a great roller and lifted high. O-aa felt a sudden surging rush as though the canoe, sentient of impending danger, sought to escape in a burst of speed.

Riding high now, just over the crest of the roller, the outrigger raced toward the beach like a frightened deer; and in a swirl of foamy water came to rest on the sand well out of reach of the tandoraz. O-aa leaped out and held it from being drawn out again by the receding wave, and with the next she dragged it well up to safety. Then she threw herself down on the sand, exhausted.

The jalok came and sat down beside her. She stoked its shaggy coat. "We made it," she said. "I didn't think we would." The jalok said nothing. At least not in words. He put a great paw on her and licked her ear. "I shall



have to give you a name," said O-aa. "Let me see. Ah, I have it! Rahna. That is a good name for you, Rahna." Rahna means killer.

VI

O-AA sat up and took stock of her situation. Beyond the sandy beach the ground rose slowly to a low ridge four or five hundred yards inland. Beyond the ridge were rolling hills, up-curving in this horizonless world to blend with distant mountains which, in turn, blended into the haze of distance.

The ground between O-aa and the ridge was carpeted with Bermuda grass and stunted shrubs, with here and there a windblown tree. The trees reminded O-aa that she was courting death to lie here thus in the open, an invitation to the first winged reptile that might discover her.

She arose and returned to the canoe, where she threw the carcass of the deer across one shoulder and gathered up her weapons. Then she looked down at the jalok and said, "Come, Rahna!" and walked to the nearest tree.

A man coming down out of the rolling hills paused at the edge of the low ridge which O-aa had seen a few hundred yards inland. At the man's side was a jalok. The man was naked but for

a G-string. He carried a stone tipped spear, a stone knife, a bow and arrows. When he saw the girl, he dropped to the ground, where he was hidden by low bushes. He spoke to the jalok, and it lay down beside him.

The man noted the canoe pulled up on the beach. He noted the jalok which accompanied the girl. He saw the carcass of the deer. At first he had thought the girl a man, but closer inspection revealed that he had been mistaken. He was also mystified, for he knew that here there should be no girl with a jalok and a canoe. This was the man's country, and the men of the stone age knew all that went on in their own little neck-of-the-woods.

O-aa cut a generous hindquarter from the carcass and gave it to Rahna. She used the tomahawk and her steel knife. Then she gathered dry grasses and bits of dead wood, made fire, and cooked her own meal. O-aa, a slender little blonde, tore at the meat with firm, white teeth; and devoured enough for a couple of farm hands. Pellucidarians store up energy through food, for oftentimes they may have to go for long periods without food. Similarly, they store up rest by long sleeps.

Having stored up all the energy she could hold, O-aa lay down to store up rest. She was awakened by the growling of

Rahna. He was standing beside her, his hair bristling along his spine.

O-aa saw a man approaching. A jalok paced at his side. The girl seized her bow and arrows and stood up. Both jaloks were growling now. O-aa fitted an arrow to her bow. "Go away!" she said.

"I am not going to hurt you," said the man, who had seen that O-aa was very lovely and very desirable.

"I could have told you that myself," replied the girl. "If you tried to, I could kill you. Rahna could kill you. My mate, my father, or my seven brothers could kill you." It had occurred to O-aa that possibly thirteen brothers were too many to sound plausible.

The man grinned and sat down. "Who are you?" he asked.

"I am O-aa, daughter of Oose, King of Kali. My mate is Hodon the Fleet One. My seven brothers are very large, fierce men. My three sisters are the most beautiful women in Pellucidar, and I am more beautiful than they."

The man continued to grin. "I never heard of Kali," he said. "Where is it?"

"There," said O-aa, pointing. "You must be a very ignorant person," she added, "for Kali is the largest country in the world. It requires the caves of a whole

mountain range to house her warriors who are as many as the grasses that you can see as far as you can see."

"You are very beautiful," said the man, "but you are a great liar. If you were not so beautiful, I would beat you for lying so much. Maybe I shall anyway."

"Try it," challenged O-aa. "I have not killed anyone since I last slept."

"Ah," said the man, "so that is it? You killed my brother."

"I did not kill your brother. I never saw your brother."

"Then how did you get his canoe, his jalok, and his weapons? I recognize them all."

It was then that O-aa realized that she had lied a little too much for her own health; so she decided to tell the truth. "I will tell you," she said.

"And see that you tell the truth," said the man.

YOU see that mountain that sticks up out of the sea?" she asked, pointing at the island. The man nodded. "I leaped into the sea," continued O-aa, "on the other side of that mountain from a big canoe to escape an old man whose name is not Dolly Dorcas. Then I crossed to this side of the mountain where I saw Rahna."

"His name is not Rahna," said the man.

"Maybe it wasn't, but it is now. And don't interrupt me any more. Rahna saved me from a codon, and we became friends. We came down to the edge of the water and found a canoe with these weapons and a man's loin-cloth in it. If it was your brother's canoe, I think he must have gone in the water and been eaten by a tandoraz, or possibly a thipdar flew down and got him. I did not kill your brother. How could I have killed a warrior when I was armed only with a knife? As you can see, all my other weapons are those I found in the canoe."

The man thought this over. "I believe that you are telling the truth at last," he said; "because, had you killed my brother, his jalok would have killed you."

"Now will you go away and leave me alone?" demanded O-aa.

"Then what will you do?"

"I shall return to Kali."

"Do you know how far it is to Kali?"

"No. Kali is not far from the shore of the Lural Az. Do you know how far it is to the Lural Az?"

"I never heard of the Lural Az," said the man.

"You are a very ignorant person," said O-aa.

"Not as ignorant as you, if you think you can reach Kali by going in the direction you pointed. In that direction there is a

range of mountains that you cannot cross."

"I can go around it," said O-aa.

"You are a very brave girl," said the man. "Let us be friends. Come with me to my village. Perhaps we can help you on your way to Kali. At least, warriors can go with you as far as the mountains, beyond which none of our people have ever gone."

"How do I know that you will not harm me?" asked O-aa.

The man threw down all his weapons and came toward her with his hands raised. Then she knew that he would not harm her. "We will be friends," she said. "What is your name?"

"I am Utan of the tribe of Zurts." He turned and spoke to his jalok, saying, "padang." "Tell your jalok that we are friends," he said to O-aa.

"Padang, Rahna," said O-aa. Padang is Pellucidarian for friend or friends.

The two jaloks approached one another a little stiff-legged, but when they had sniffed about each other, they relaxed and wagged their tails, for they had been raised together in the village of the Zurts. But there was no playful bouncing, as there might have been between domesticated dogs. These were savage wild beasts with all the majesty and dignity that is inherent in their kind. Adult wild beasts

have far more dignity than man. When people say in disgust that a person acts like a beast, they really mean that he acts like a man.

"You can handle a paddle?" Utan asked O-aa.

"I have paddled all over the seas of Pellucidar," said O-aa.

"There you go again! Well, I suppose that I shall have to get used to it. Anyway, you can help me paddle my brother's canoe to a safe place."

"It is my canoe," said O-aa.

Utan grinned. "And I suppose that you are going to paddle it across the mountains to Kali?"

"I could if I wanted to," said O-aa.

"The better I know you," said Utan, "the less I doubt it. If there are other girls like you in Kali, I think I shall go with you and take one of them for my mate."

"They wouldn't have you," said O-aa. "You are too short. You can't be much more than six feet tall. All our men are seven feet—except those who are eight feet."

"Come on, little liar," said Utan, "and we will get the canoe."

Together they dragged the outrigger into the water. O-aa climbed into the bow, the two jaloks leaped in, and just at the right moment Utan gave the craft a shove and jumped in.

"Paddle now!" he said, "And paddle hard."

The canoe rose to the crest of a roller and slid down the other side. The two paddled furiously until they were beyond the heavy rollers; then they paralleled the shore until they came to the mouth of a small river, up which Utan turned.

It was a pretty little river overhung by trees and full of crocodiles. They paddled up it for about a mile until they came to rapids. Here, Utan turned in to the bank on their right; and together they dragged the canoe up among the lush verdure, where it was well hidden.

"Your canoe will be quite safe here," said Utan, "until you are ready to paddle it over the mountains to Kali. Now we will go to my village."

VII

HODON, Raj, Dian, and Gam-ba were standing on the quarterdeck of the Lo-har; and, as always, Hodon was searching the surface of the sea for the little speck that, in his heart of hearts, he knew he would never see—the little speck that would be the Sari in which O-aa had been carried away by winds and currents on the Sojar Az and, doubtless, through the nameless strait into the Korsar Az. The little lateen rigged Lo-har had

been beset by fog and calm, but now the weather had cleared and a fair wind filled the single sail.

Hodon shook his head sadly. "I am afraid it is hopeless, Dian," he said. Dian the Beautiful nodded in acquiescence.

"My men are becoming restless," said Raj. "They have been away from home for many, many sleeps. They want to get back to their women."

"All right," said Hodon. "Turn back for Sari."

As the little ship came about, Gamba pointed. "What is that?" he asked.

They all looked. In the haze of the distance there was a white speck on the surface of the sea. "It is a sail," said Raj.

"O-aa!" exclaimed Hodon.

The wind was blowing directly from the direction in which the sail lay; so the Lo-har had to tack first one way and then another. But it was soon apparent that the strange ship was sailing before the wind directly toward them, and so the distance between was constantly growing shorter.

"That is not the Sari," said Raj. "That is a big ship with more sail than I have ever seen before."

"It must be a Korsar," said Dian. "If it is, we are lost."

"We have cannon," said Hodon, "and men to fight them."

"Turn around," said Gamba,

"and go the other way. Maybe they have not seen us."

"You always want to run away," said Dian, contemptuously. "We shall hold our course and fight them."

"Turn around!" screamed Gamba. "It is a command! I am king!"

"Shut up!" said Raj. "Mezops do not run away."

"Nor Sarians," said Dian.

* * *

The village of the Zurts, to which Utan lead O-aa, lay in a lovely valley through which a little river wandered. It was not a village of caves such as O-aa was accustomed to in Kali. The houses here were of bamboo thatched with grass, and they stood on posts some ten feet above the ground. Crude ladders led up to their doorways.

There were many of these houses; and in the doorways, or on the ground below them, were many warriors and women and children and almost as many jaloks as there were people.

As Utan and O-aa approached, the jaloks of the village froze into immobility, the hair along their backbones, erect. Utan shouted, "Padang!" And when they recognized him, some of the warriors shouted, "Padang!" Then the jaloks relaxed, and Utan and O-aa entered the village in safety; but there had to be much sniffing and smelling on

the part of the jaloks before an *entente cordiale* was established.

Warriors and women gathered around Utan and O-aa, asking many questions. O-aa was a curiosity here, for she was very blonde, while the Zurts had hair of raven black. They had never seen a blonde before.

Utan told them all that he knew about O-aa, and asked Jalu the chief if she might remain in the village. "She is from a country called Kali which lies the other side of the Terrible Mountains. She is going to try to cross them, and from what I have seen of her she will cross them if any one can."

"No one can," said Jalu, "and she may remain—for thirty sleeps," he added. "If one of our warriors has taken her for a mate in the mean time, she may remain always."

"None of your warriors will take me for a mate," said O-aa, "and I will leave long before I have slept thirty times."

"What makes you think none of my warriors will take you for a mate?" demanded Jalu.

"Because I wouldn't have one of them."

Jalu laughed. "If a warrior wanted you he would not ask you. He would take you."

It was O-aa's turn to laugh. "He would get a knife in his belly," she said. "I have killed many men. Furthermore, I have

a mate. If I am harmed, he would come and my eleven brothers and my father, the king; and they would kill you all. They are very fierce men. They are nine feet tall. My mate is Hodon the Fleet One. He is a Sarian. The Sarians are very fierce people. But if you are kind to me, no harm will befall you. While I am here, Rahna and I will hunt for you. I am a wonderful hunter. I am probably the best hunter in all Pellucidar."

"I think you are probably the best liar," said Jalu. "Who is Rahna?"

"My jalok," said O-aa, laying her hand on the head of the beast standing beside her.

"Women do not hunt, nor do they have jaloks," said Jalu.

"I do," said O-aa.

A half smile curved the lip of Jalu. He found himself admiring this yellow haired stranger girl. She had courage, and that was a quality that Jalu the chief understood and admired. He had never seen so much of it in a woman before.

A warrior stepped forward. "I will take her as my mate," he said, "and teach her a woman's place. What she needs is a beating."

O-aa's lip curved in scorn. "Try it, bowlegs," she said.

The warrior flushed, for he was very bowlegged and was sensitive about it. He took an-

other step toward O-aa threatening.

"Stop, Zurk!" commanded Jalu. "The girl may remain here for thirty sleeps without mating. If she stays longer, you may take her—if you can. But I think she will kill you."

Zurk stood glaring at O-aa. "When you are mine," he snarled, "the first thing I will do is beat you to death."

Jalu turned to one of the women. "Hala," he directed, "show this woman a house in which she may sleep."

"Come," said Hala to O-aa.

She took her to a house at the far end of the village. "No one lives here now," she said. "The man and the woman who lived here were killed by a tarag not long ago."

O-aa looked at the ladder and up at the doorway. "How can my jalok get up there?" she asked.

Hala looked at her in surprise. "Jaloks do not come into the houses," she explained. "They lie at the foot of the ladders to warn their owners of danger and to protect them. Did you not know this?"

"We do not have tame jaloks in my country," said O-aa.

"You are lucky that you have one here, now that you have made an enemy of Zurk. He is a bad man; not at all like Jula, his father."

So, thought O-aa, *I have made an enemy of the chief's son*. She shrugged her square little shoulders.

* * *

Ah-gilak had bowled along in a southwesterly direction for some time before a good wind. Then the wind died. Ah-gilak cursed. He cursed many things, but principally he cursed O-aa, who had brought all his misfortunes upon him, according to his superstition.

When the wind sprang up again, it blew in the opposite direction from that in which it had been blowing before the calm. Ah-glak danced up and down in rage. But he could do nothing about it. He could sail in only one way, and that was with the wind. So he sailed back in a northeasterly direction. He lashed the wheel and went below to eat and sleep.

VIII

AS the Lo-har and John Tyler approached one another, the former made no effort to avoid the larger ship. Her guns were loaded and manned, and she was prepared to fight.

It was Raj who first noticed something peculiar about the strange ship. "There is no one on deck," he said. "There is no one at the wheel. She is a fine ship," he added half to himself. Then

an idea popped into his head. "Let's capture her," he said.

"No! No!" cried Gamba. "They haven't seen us. Sail away as fast as you can."

"Can you bring the Lo-har alongside her?" asked Dian.

"Yes," said Jav. He summoned his men from below and gave them their orders.

The Lo-har came about ahead of the John Tyler which was making far better headway than the smaller vessel. As the John Tyler overhauled her, Jav drew in closer to the other ship. As their sides touched, the agile Mezops swarmed aboard the John Tyler with lines and made the Lo-har fast to her.

The impact of the two ships as they came together awoke Ahgilak. "Dod-burn it! what now?" he cried, as he scrambled up the ladder to the main deck. "Tarnation!" he exclaimed as he saw a score of Mezops facing him. "I've gone plumb looney after all." He shut his eyes and turned his head away. Then he peeked from a corner of one eye. The copper colored men were still there.

"It's the little Ah-gilak," said one of the Mezops. "He eats people."

Now Ahgilak saw more people coming over the side of his ship, and saw the sail of the little Lo-har. He saw Raj and Hodon and a beautiful girl whom

he had never seen before. With them was a yellow man. But now Ahgilak realized what had happened and the great good luck that had overtaken him at the very moment when there seemed not a ray of hope in all the future.

"Gad and Gabriel!" he exclaimed. "It never rains but they's a silver lining, as the feller said. Now I got a crew. Now we can get the hell out o' this here Korsar Az an' back to Sari."

"Who else is aboard?" asked Hodon.

"Not a livin' soul but me." He thought quickly and decided that perhaps he had better not tell all the truth. "You see we had a little bad luck—run ashore in a storm. When the crew abandoned ship, I guess they plumb forgot me; and before I could get ashore, the wind changed and the tide came in, an', by all tarnation, the first thing I knew I was a-sailin' off all by myself."

"Who else was aboard?" insisted Hodon.

"Well, they was Ja, and Jav, and Ko, an' a bunch of other Mezops. They was the ones that abandoned ship. But before that O-aa got a yen to go ashore—"

"O-aa?" cried Hodon. "She was aboard this ship? Where is she?"

"I was just a-tellin' you. She

got a yen to go ashore, and jumped overboard."

"Jumped overboard?" Hodon's voice rang with incredulity. "I think you are lying, old man," he said.

"Cross my heart, hope to die," said Ah-gilak.

"How did she get aboard this ship?" continued Hodon.

"Why, we picked her up out of a canoe in the nameless strait; and she told us where David was, an' we went back an' rescued him."

"David?" exclaimed Dian. "Where is he?"

"Well, before the John Tyler went ashore, David an' Abner Perry an' Ghak an' all his Sarian warriors decided they could get back to Sari quicker cross country than they could by sailin' back. Course they was plumb looney, but—"

"Where did they go ashore?" asked Dian.

"Gad an' Gabriel! How'd I know? They ain't no charts, they ain't no moon, they ain't no stars, and the dang sun don't never move; so they ain't no time. They might o' went ashore twenty year ago, fer all a body can tell."

"Would you recognize the coast where they landed?"

"I might an' I might not. Reckon as how I could though."

"Could you recognize the spot where O-aa jumped overboard?" asked Hodon.

"Reckon not. Never seed it. She jumped over in a fog."

"Haven't you any idea?"

"Well, now maybe." Ah-gilak being certain that O-aa had drowned or been eaten by one of the reptiles that swarm the Korsar Az, felt that it would be safe to give what information he could. "As a matter of fact," he continued, "'t warn't far from where the John Tyler went ashore."

"And you would recognize that spot?"

"I might an' I might not. If I recalls correctly they was an island 'bout a mile off shore near where the John Tyler hit."

"Well, let's get going," said Hodon.

"Where?" demanded Ah-gilak.

"Back along the coast to where O-aa 'jumped overboard' and to where David Innes went ashore."

"Now wait, young feller," remonstrated Ah-gilak. "Don't you go forgettin' that I'm skipper o' this ship. It's me as'll give orders aboard this hooker."

HODON turned to Raj. "Have your men bring all the water, provisions, ammunition, and personal belongings from the Lohar; then set her adrift."

Ah-gilak pointed a finger at Hodon. "Hold on there young feller—"

"Shut up!" snapped Hodon, and then to Raj: "You will cap-

tain the John Tyler, Raj."

"Gad an' Gabriel!" screamed Ah-gilak. "I designed her, I named her, an' I been skipper of her ever since she was launched. You can't do this to me."

"I can, I have, and I'll do more if you give me any trouble," said Hodon. "I'll throw you overboard, you old scoundrel."

Ah-gilak subsided and went away and sulked. He knew that Hodon's was no idle threat. These men of the Stone Age held life lightly. He set his mind to the task of evolving a plan by which he could be revenged without incriminating himself. Ah-gilak had a shrewd Yankee mind unfettered by any moral principles or conscience.

He leaned against the rail and glared at Hodon. Then his eyes wandered to Dian, and he glared at her. Another woman! Bad luck! And with this thought the beginnings of a plan commenced to take shape. It was not a wholly satisfactory and devastating plan, but it was better than nothing. And presently he was aided by a contingency which Hodon had not considered.

With the useful cargo of the Lo-har transferred to the John Tyler and the former set adrift, Raj came to Hodon, a worried expression on his fine face.

"This," he said with a wave of a hand which embraced the John Tyler, "is such a ship as I and

my men have never seen before. She is a mass of sails and ropes and spars, all unfamiliar to us. We cannot sail her."

For a moment Hodon was stunned. Being a landsman, such a possibility had never occurred to him. He looked astern at the little Lo-har, from which the larger ship was rapidly drawing away. Hodon realized that he had been a trifle precipitate. While there was yet time, perhaps it would be well to lower the boats and return to the Lo-har. The idea was mortifying.

Then Raj made a suggestion. "The old man could teach us," he said. "If he will," he added with a note of doubt in his voice.

"He will," snapped Hodon, and strode over to Ah-gilak. Raj accompanied him.

"Ah-gilak," he said to the old man, "you will sail the ship, but Raj will still be captain. You will teach him and his men all that is necessary."

"So you are not going to throw me overboard?" said Ah-gilak with a sneer.

"Not yet," said Hodon, "but if you do not do as I have said and do it well, I will."

"You got your nerve, young feller, askin' me, a Yankee skipper, to serve as sailin' master under this here gol-durned red Indian."

Neither Hodon nor Raj had the slightest idea what a red Indian

was, but from Ah-gilak's tone of voice they were both sure that the copper colored Mezop had been insulted.

"I'll sail her fer ye," continued Ah-gilak, "but as skipper."

"Come!" said Hodon to Raj. "We will throw him overboard."

As the two men seized him, Ah-gilak commenced to scream. "Don't do it," he cried. "I'll navigate her under Raj. I was only foolin'. Can't you take a joke?"

So the work of training Raj and his Mezops commenced at once. They were quick to learn, and Ah-gilak did a good job of training them; because his vanity made it a pleasure to show off his superior knowledge. But he still nursed his plan for revenge. His idea was to cause dissension, turning the copper colored Mezops against the white Hodon and Dian. Of course Ah-gilak had never heard of Communists, but he was nonetheless familiar with one of their techniques. As he worked with the Mezops, he sought to work on what he considered their ignorance and superstition to implant the idea that a woman on shipboard would be certain to bring bad luck and that Dian was only there because of Hodon. He also suggested to them that the latter felt superior to the Mezops because of his color, that he looked down on them as inferior, and

that it was not right that he should give orders to Raj. He nursed the idea that it would be well for them all should Dian and Hodon accidentally fall overboard.

The Mezops were neither ignorant nor superstitious, nor had they ever heard of race consciousness or racial discrimination. They listened, but they were not impressed. They were only bored. Finally, one of them said to Ah-gilak, "Old man, you talk too much about matters which have nothing to do with sailing this ship. We will not throw Hodon the Fleet One overboard, neither will we throw Dian the Beautiful overboard. If we throw anyone overboard it will be you."

Ah-gilak subsided.

IX

AFTER O-aa had slept, she came to the doorway of her house and looked around. The village seemed very quiet. There were only a few people in sight and they were at the far end of the village. She descended the ladder. Rahna, who had been lying at the foot of it, stood up and wagged his tail. O-aa scratched him between his ears.

"I am hungry," she said; "so you must be, too. We will hunt."

She had brought her weapons. Those of the Stone Age who

would survive have their weapons always at hand.

"Come, Rahna!" she said, and started up the valley away from the village.

A man, standing in the doorway of a hut farther down the village street, saw them leave. It was Zurk, the son of Jalu the chief. When a turn in the little valley hid them from his sight, he started after them with his jalok. He was a heavy barreled man, short on his bowed legs; and he lurched from side to side a little as though one leg were shorter than the other. His face was coarse and brutal, with beetling brows overhanging close-set eyes.

O-aa and Rahna moved silently up the valley, searching for game. There was a high wind blowing from the direction of the sea, and presently the sun was obscured by black clouds. There was a flash of lightning followed by the deep roar of thunder. The wind rose to violence and rain commenced to fall. But none of these things appeased O-aa's hunger; so she continued to hunt.

The valley turned suddenly to the right, paralleling the coast; and it became narrower. Its walls were neither high nor steep at this point; so O-aa ascended the right hand wall and came out upon a tree dotted mesa. Here there were tall grasses in which

the smaller game might hide.

And Zurk followed with his jalok. O-aa's spoor in the light mud of the new fallen rain was easy to follow. When Zurk came out upon the mesa, O-aa, who had been advancing very slowly, was not far ahead. So intent was she on her search for game that Zurk closed rapidly on her without attracting her attention or that of Rahna. The wind and the rain and the rumbling thunder were all on the side of Zurk.

Zurk's plan was made. He would shoot the girl's jalok; then she would be at his mercy. He closed up the distance between them to make sure that he would not miss. He fitted an arrow to his bow. He made no sound, but something made O-aa look behind her just then.

Her own bow was ready for the kill, for any game that she or Rahna might flush. Recognizing Zurk, seeing his bow drawn, she wheeled and loosed an arrow. Zurk's bow string twanged simultaneously with hers, but the arrow was aimed at O-aa and not at Rahna.

Zurk missed, but O-aa's arrow drove through the man's shoulder. Then O-aa turned and fled. Zurk knew that on his short bowed legs he could not overtake her. He spoke sharply to his jalok and pointed at the fleeing girl. "Rah!" he snapped. Rah means kill.

The powerful, savage brute bounded in pursuit.

* * *

THE seas fled before the wind, mounting as the wind mounted. The John Tyler carried but a rag of sail. She handled well, she was seaworthy. Ah-gilak was proud of her. Even when the storm reached almost tornado proportions he did not fear for her.

Gamba the king, cowering below, was terrified, reduced almost to gibbering idiocy by fear. Dian watched him with disgust. And this thing had dared to speak to her of love! Hodon was nervous below deck. Like all mountain men, he wanted to be out in the open. He wanted to face the storm and the danger where he could see them. Below, he was like a caged beast. The ship was pitching wildly, but Hodon managed to fight his way to a ladder and then to the deck above.

Both the wind and the current had combined with malevolent fury in an attempt to hurl the John Tyler on the all too near shore. Dead ahead loomed the green island upon which O-aa had been cast when she leaped overboard in the fog. Ah-gilak realized that he could make no offing there, that he would have to pass between the island and the shore, only a bare mile away. And through uncharted waters,

below the tumbling surface of which might lie reefs and rocks. Ah-gilak was not happy.

Hodon saw the mountainous waves and wondered that any ship could live in such a sea. Being a landsman, he saw the high seas as the only menace. Ah-gilak feared for the things he could not see—the reefs and the rocks—and the current that he and the ship fought. It was a titanic battle.

Hodon, clinging to a stanchion to keep from falling, was quite unconscious of a real danger that confronted him on the deck of the John Tyler. The ship rose to meet the great seas and then drove deep into the troughs, but so far she had shipped but little green water.

Ah-gilak saw the man, and his toothless mouth grimaced. The wind and the blinding rain beat about him. The tornado whipped his long white beard. *There won't be no call to throw the dod-burned idjit overboard*, he thought. Raj saw Hodon and called a warning to him, but the wind drove his voice down his throat.

Just before the ship reached the shelter of the island's lee, a monstrous sea loomed above her. It broke, tons of it, over her, submerging her. The John Tyler staggered to the terrific impact, then slowly she rose, shaking the water from her.

Ah-gilak looked, and grinned. Hodon was no longer by the stancheon. In the shelter of the island, Ah-gilak hove to and dropped anchor. The John Tyler had weathered the storm and was safe.

Raj's eyes searched the tumbling waters, but they were rewarded by no sight of Hodon. The Mezop shook his head sadly. He had liked the Sarian. Later, when Dian came on deck, he told her; and she, too, was sad. But death comes quickly and often in the Stone Age.

"Perhaps it is just as well," said Dian. "They are both gone now, and neither is left to grieve." She was thinking of how often she had wished for death when she had thought David dead.

Ah-gilak shed crocodile tears, but he did not fool the Mezops. Had they not known that it would have been impossible, they would have thought that he had been instrumental in throwing Hodon overboard; and Ah-gilak would have gone over, too.

A GREAT comber threw Hodon far up the sandy beach, and left him exhausted and half dead. The enormous seas had buffeted him. His head had been beneath the surface more often than it had been above. But the tide and the wind and the current had been with him. As had

a kindly Providence, for no terrible creature of the deep had seized him. Perhaps the very turbulence of the water had saved him, keeping the great reptiles down in the relative quiet far below the surface.

Hodon lay for a long time where the sea had spewed him. Occasionally a wave would roll up and surge around him, but none had the depth or volume to drag him back into the sea.

At last he got slowly to his feet. He looked back and saw the John Tyler riding at anchor behind the island. Because of the torrential rain he could but barely discern her; so he knew that those on board could not see him at all. He thought of building a fire in the hope that its smoke might carry a message to them, but there was nothing dry with which to make fire.

Before the storm struck them, Ah-gilak had said that he thought the ship was approaching the spot at which the Mezops had abandoned her. If that were the case, then the island was close to the place at which O-aa was supposed to have leaped overboard. If she had survived, which he doubted, she would be making her way right now toward Kali, hundreds of miles away. Perhaps, somewhere in this unknown land of terrors, she was even now pursuing her hopeless journey.

That he might ever find her in all this vast expanse of plain and hill and mountain he knew to be wholly unlikely, even were she there. But there was the chance. And there was his great love for her. Without a backward glance, Hodon the Fleet One turned his face and his steps northeast toward Kali.

X

O-AA ran like the wind. She did not know that Zurk had set his jalok on her. She thought only of escaping the man, and she knew that on his bowed legs he could never overtake her.

Zurk pulled upon the arrow embedded in his shoulder. It had just missed his heart. The rough stone tip tore at the tender wound. Blood ran down the man's body. His features were contorted with pain. He swore. He was very careful as he withdrew the shaft lest the point should be deflected and touch his heart. The girl and the jalok were out of sight, having passed through bushes into a slight depression.

Rahna had followed his mistress, loping easily along a few yards behind her. Suddenly another jalok flashed past him, straight for the fleeing girl.

* * *

Hodon the Fleet One turned his face and his steps northeast toward Kali. Hodon knew noth-

ing about the points of the compass, but his homing instinct told him the direction to Sari; and, knowing where Kali lay in relation to Sari, his homeland, he knew the direction he must take.

He had been walking for some time, when, emerging from a clump of bushes, he came upon a man sitting with his back against the bole of a tree. Hodon was armed only with a knife, which was not well in a world where the usual greeting between strangers is, "I kill."

He was very close to the man before he saw him, and in the instant that he saw him, he saw that his body was smeared with blood and a little stream of blood ran down his chest from a wound in his breast.

Now the Sarians, because of the influence of David Innes and Abner Perry, are less savage and brutal than the majority of Pellucidarians. Although Perry had taught them how to slaughter their fellow men scientifically with muskets, cannon, and gunpowder, he had also preached to them the doctrine of the brotherhood of man; so that their policy now was based on the admonition of a man they had never heard of who had lived in a world they would never see, to "speak softly and carry a big stick", for Abner Perry had been a worshipper of Teddy Roosevelt.

The man's head was bowed, his chin lay upon his breast. He was barely breathing. But when he realized that someone had approached him he looked up and snarled. He expected to be killed, but he could do nothing about it.

Hodon turned back to the bushes through which he had just passed and gathered some leaves. He made a little ball of the most tender of them and came back to the man. He knelt beside him and plugged the hole in his chest with the little ball of leaves, stopping the flow of blood.

There was questioning in Zurk's dull eyes as he looked into those of the stranger. "Aren't you going to kill me?" he whispered.

Hodon ignored the question. "Where is your village?" he asked. "Is it far?"

"Not far," said Zurk.

"I will help you back to it, if you promise me that the warriors will not kill me."

"They will not kill you," said Zurk. "I am the chief's son. But why do you do this for a stranger?"

"Because I am a Sarian," said Hodon proudly.

Hodon helped Zurk to his feet, but the man could scarcely stand. Hodon realized that he could not walk; so he carried him picka-back, Zurk directing him toward the village.

The wind still blew and rain fell, but the storm was abating as Hodon carried the chief's son into the village. Warriors came from their houses with ready weapons, for Hodon was a stranger to be killed on sight. Then they saw Zurk, who was unconscious now, and hesitated.

Hodon faced them. "Instead of standing there scowling at me," he said, "come and take your chief's son and carry him to his house where the women can care for him."

When they had lifted Zurk from his back, Hodon saw that the man was unconscious and that he might be killed after all. "Where is the chief?" he asked.

JALU was coming toward them from his house. "I am the chief," he said. "You are either a very brave man or a fool to have wounded my son and then brought him to me."

"I did not wound him," said Hodon. "I found him wounded and brought him here, else he would have died. He told me that if I did this the warriors would not kill me."

"If you have spoken the truth the warriors will not kill you," said Jalu.

"If the man dies before he regains consciousness, how will you know that I have spoken the truth?" asked Hodon.

"We will not know," said Jalu.

He turned to one of his warriors. "Have him treated well, but see that he does not escape."

"The brotherhood of man is all right," said Hodon, "if the other fellow knows about it." They did not know what he was talking about. "I was a fool not to let him die," he added.

"I think you were," agreed Jalu.

Hodon was taken to a house and a woman was sent to take him food. Two warriors stood guard at the foot of the ladder. The woman came with food. It was Hala. She looked at the handsome prisoner with questioning eyes. He did not look stupid, but then one could not always tell just by looks.

"Why did you bring Zurk back when you knew that you might be killed? What was he to you?" she asked.

"He was a fellow man, and I am a Sarian," was Hodon's simple explanation.

"You, a Sarian?" demanded Hala.

"Yes. Why?"

"There is a Sarian with us, or there was. She went away, I think to hunt; and she has not returned."

Hodon paled. "What was her name?" he asked.

"Oh, I was wrong," said Hala. "She is not a Sarian. It is her mate that is a Sarian. She comes from another country where the

men are nine feet tall. She has eleven brothers and her father is a king."

"And her name is O-aa," said Hodon.

"How do you know?" demanded Hala.

"There is only one O-aa," said Hodon, enigmatically. "Which way did she go?"

"Up the valley," said Hala. "Zurk followed her. Zurk is a bad man. It must have been O-aa who wounded him."

"And I have saved him!" exclaimed Hodon. "Hereafter I shall leave the brotherhood of man to others."

"What do you mean by that?"

"It is meaningless," said Hodon. "I must get out of here and follow her."

"You cannot get out," said Hala. Suddenly her eyes went wide in understanding. "You are Hodon the Fleet One," she said.

"How did you know that?"

"That is the name of O-aa's mate. She said so, and that he is a Sarian."

"I must get out," said Hodon.

"I would help you if I could," said Hala. "I liked O-aa and I like you, but you will only get out of this village alive if Zurk regains consciousness and says that he promised that you would not be killed."

"Will you go and find out if he has regained consciousness?" he asked her.

O-AA heard a savage growl close behind her. She turned to see a strange jalok reared on its hind feet to seize her and drag her down. As she leaped, quick as a chamois, to one side, she saw something else. She saw Rahna spring upon the strange jalok and hurl it to the ground. The fight that ensued was bloody and terrifying. The two savage beasts fought almost in silence. There were only snarls of rage. As they tore at one another, O-aa circled them, spear in hand, seeking an opportunity to impale Rahna's antagonist. But they moved so quickly that she dared not thrust for fear of wounding Rahna instead of the other.

Rahna needed no help. At last he got the hold for which he had been fighting—a full hold of the other jalok's throat. The mighty jaws closed, and Rahna shook the other as a terrier shakes a rat. It was soon over. Rahna dropped the carcass and looked up into O-aa's eyes. He wagged his tail, and O-aa went down on her knees and hugged him, all bloody as he was.

She found the leaves she needed, and a little stream, and there she washed Rahna's wounds and rubbed the juices of the leaves into them. After that, she flushed a couple of hares and some strange birds that have not been on earth for a million years. She fed Rahna, and she ate her own

meat raw, for there was nothing dry with which to make fire.

She did not dare go back to the village, both because she feared that she might have killed Zurk and feared that she hadn't. In one event, Jalu would kill her if her deed were discovered; in the other, Zurk would kill her. She would go on toward Kali, but first she would sleep. Beneath a great tree she lay down, and the fierce hyaenadon lay down beside her.

XI

THE great storm passed on. Again the sun shone. The seas subsided. Saddened, Dian suggested that they turn back toward Sari. "What is the use of going on?" she demanded. "They are all dead."

"Perhaps not," said Raj. "Perhaps not all. David, Abner, Ghak, and over two hundred warriors can make their way anywhere in Pellucidar. They may be waiting for us in Sari when we return."

"Then let's return as soon as possible," said Dian.

"And even for O-aa and Hodon there may be hope."

Dian shook her head. "Had they been together, possibly; but alone, no. And then, even if Hodon reached shore, he was armed with only a knife."

So they weighed anchor, put about, and laid a course for the nameless strait.

At the same time, David, Perry, and Ghak, were holding a council of war, so to speak. There was no war except with the terrain. With the two hundred fierce Sarians, armed with muskets and well supplied with ammunition, the party had moved through the savage world with not a single casualty.

They lived well off a country rich in game, fruits, vegetables, berries, nuts. But the terrain had almost beaten them. The backbone of the great peninsula they were attempting to cross is a mountain range as formidable as The Himalayas and practically insurmountable for men clothed only in G-strings. Its upper reaches ice locked and snow-bound presented an insurmountable barrier to these almost naked men of the Stone Age.

When they had reached the mountains, they had moved in a northeasterly direction searching for a pass. Many sleeps had passed, but still the unbroken facade of the Terrible Mountains barred the way to Sari. Time and again they had followed up deep canyons, hoping that here at last was a gap through which they could pass. And time and again they had had to retrace their steps. Now, as far as the eye could reach until vision was lost in the haze, the Terrible Mountains stretched on seemingly into infinity.

"There is no use going on in this direction," said David Innes.

"Well, where in the world shall we go?" demanded Abner Perry.

"Back," said David. "There are no mountains on the Lidi Plains nor in The Land of Awful Shadow. We can cross there to the east coast and follow it up to Sari."

So they turned back toward the southwest, and started anew the long, long trek for home.

Later, many sleeps later, the three man point, which David always kept well ahead of his main body, sighted warriors approaching. One of the warriors of the point ran back to notify David, and presently the Sarians advanced in a long, thin skirmish line. Their orders were not to fire until fired upon, and then to fire one volley over the heads of the enemy. David had found that this was usually enough. At the roar and the smoke, the enemy ordinarily fled.

To David's astonishment, the strange warriors also formed a line of skirmishers. This was a tactical innovation brought to Pellucidar by David. He had thought that only warriors trained under the system of the Army of the Empire used it. The two lines moved slowly toward one another.

"They look like Mezops," said David to Ghak. "They are copper colored."

"How could there be Mezops here?" demanded Ghak.

David shrugged. "I do not know."

Suddenly the advancing line of copper colored warriors halted. All but one. He advanced, making the sign of peace. And presently David recognized him.

"Ja!" he exclaimed, and went forward to meet him.

"First I saw the muskets," said Ja, "and then I recognized you."

Ja told of the loss of O-aa and the abandonment of the John Tyler and how it had sailed out to sea with only Ah-gilak.

"So they are both lost," said David, sadly.

"Ah-gilak is no loss," said Ja; "but the girl—yes."

And so Ja and Jav and Ko and the other Mezops joined the Sarians, and the march was resumed toward the Lidi Plains and the Land of Awful Shadow.

A WARRIOR came to the foot of the ladder leading to the house where Hodon was confined. He spoke to the guards, and one of them called to Hodon. "Sarian, come down. Jalu has sent for you."

Jalu sat on a stool in front of the house where Zurk lay. He was scowling, and Hodon thought that Zurk had died. "Zurk has spoken," said Jalu. "He said that you had told the

truth. He said more. It was O-aa who loosed the arrow that wounded him. Zurk said that she was right to do it. He had followed her to kill her. Now he is sorry. I will send warriors with you to search for her. If you find her, or if you do not, the warriors will either bring you back here or accompany you to the foot of the Terrible Mountains, which is where O-aa wished to go. I do this because of what you did for Zurk when you might have killed him. When do you wish to start?"

"Now," said Hodon.

With twenty warriors and their jaloks, he set out in search of O-aa.

* * *

O-aa slept for a long time or for but a second. Who may know in the timeless world of Pellucidar? But it must have been for some considerable outer crust time; because things happened while she slept that could not have happened in a second.

She was awakened by Rahna's growls. She awoke quickly and completely, in full possession of all her faculties. When one is thus awakened in a Stone Age world, one does not lie with closed eyes and stretch luxuriously and then cuddle down for an extra cat nap. One snaps out of sleep and lays hold of one's weapons.

Thus, did O-aa; and looked quickly around. Rahna was

standing with his back toward her, all the hairs along his spine standing on end. Beyond him, creeping toward them, was a tarag, the huge tiger of the Inner World. A jalok is no match for a tarag; but Rahna stood his ground, ready to die in protection of his mistress.

O-aa took in the scene instantly and all its implications. There was but one course to pursue were she to save both Rahna and herself. She pursued it. She swarmed up the tree beneath which she had been sleeping, taking her bow and arrows with her. "Rahna!" she called, and the jalok looked up and saw her. Then the tarag charged. Freed from the necessity of sacrificing his life to save the girl's, Rahna bounded out of harm's way. The tarag pursued him, but Rahna was too quick for him.

Thus thwarted, the savage beast screamed in rage; then he leaped upward and tried to scramble into the tree after O-aa; but the limb he seized was too small to support his great weight, and he fell to the ground upon his back. Rahna rushed in and bit him, and then leaped away. Once more the great cat sprang after the jalok, but Rahna could run much faster. O-aa laughed and described the tarag and its ancestors with such scurrilous vituperation as she could command and in a loud voice.

The tarag is probably not noted for its patience; but this tarag was very hungry, and when one is hungry one will exercise a little patience to obtain food. The tarag came and lay down under the tree. It glared up at O-aa. It should have been watching Rahna. The jalok crept stealthily behind it; then rushed in and bit it savagely in the rear, bounding away again instantly. Again the futile pursuit.

And again it came and lay down beneath the tree, but this time it kept its eyes on Rahna. O-aa fitted an arrow to her bow and drove it into the tarag's back. With a scream of pain and rage, the cat leaped into the air. But it would take more than one puny arrow to do more than infuriate it.

Another arrow. This time the tarag saw from whence it came, and very slowly and methodically it began to climb the bole of the tree. O-aa retreated into the higher branches. Rahna ran in and tore at the tarag's rump, but the beast continued its upward climb.

O-aa no longer felt like laughing. She guessed what the end would be. The mighty cat would climb after her until their combined weight snapped the tapering stem and carried them both to the ground.

It was upon this scene that Hodon and Utan and the other

warriors broke. Utan recognized Rahna and knew that O-aa must be in the tree. Rahna turned on this new menace, and Utan shouted to O-aa to call him off. He did not want to have to kill the courageous animal.

With relief, O-aa heard the voices of men. Any men would have been welcome at that moment, and she shouted the single word, "Padang" to Rahna. Jalu had armed Hodon, and now twenty-one bow strings twanged and twenty-one arrows pierced the body of the tarag. But even these did not kill him. They did bring him down out of the tree and set him upon these new enemies.

The men scattered, but they kept pouring arrows into the beast, and each time he charged one of them, jaloks leaped in and tore at him. But at last he died. An arrow reached his savage heart.

O-aa came down from the tree. She just stood and looked at Hodon in wide eyed silence. Then two tears ran down her cheeks, and in front of all the warriors Hodon the Fleet One took her in his arms.

XII

JALU's twenty warriors accompanied O-aa and Hodon to the Terrible Mountains. "You can never cross them," said Utan.

"You had better come back and join our tribe. Jalu said that he would accept you."

Hodon shook his head. "We belong in Sari, my mate and I. We may never reach Sari, but we must try."

"We will reach Sari," said O-aa. "You and I and Rahna can go anywhere. There is nothing we Sarians cannot do."

"I thought that you were from Kali where the men are nine feet tall," said Utan.

"I am from where my mate is from," said O-aa. "I am a Sarian."

"If I thought that there was another girl like you in Kali, I would go there," said Utan.

"There is no other girl like O-aa in all Pellucidar," said Hodon the Fleet One.

"I believe you," said Utan.

Jalu's warriors ate and slept, and then they started back for their village; and Hodon and O-aa took up the long trail—in the wrong direction. They moved toward the northeast. But after all it proved to be the right direction, for before they had slept again they met David and his party. For all of them it was like meeting old friends who had returned from death.

Who may say how long it took them to make the incredible march of nearly two thousand five hundred miles down to the Lidi Plains and the Land of Aw-

ful Shadow and across to the east coast and back up to Sari? But at last they came to the village, the village that most of them had never expected to see again; and among the first to welcome them was Dian the Beautiful. The John Tyler had made the long trip in safety.

Every one was happy except

Ah-gilak and Gamba. Ah-gilak had been happy until he saw O-aa. Gamba was never happy. Abner Perry was so happy that he cried, for those whom he thought his carelessness had condemned to death were safe and at home again. Already, mentally, he was inventing a submarine.

THE END

COMING NEXT MONTH



Under the blasting rays of Lord Sun, the Terran Observer watched the crimson-skinned natives build their weird craft . . . and he wondered how to save them from themselves, not knowing that he watched the crisis of a civilization. **Neil Barrett, Jr.** headlines the December issue of **AMAZING** with his perceptive, exciting *To Plant A Seed*.

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For all this—plus other stories and our usual departments be sure to get the December issue of **AMAZING**, America's First Magazine of Science Fiction. On sale at all newsstands November 7.

DOWN TO EARTH

By HARRY HARRISON

Illustrated by LUTJENS

Whatever goes up must come down. Including moon rockets.

But there's no law saying what they must come down to.

GINO . . . Gino . . . help me! For God's sake, do something!"

The tiny voice scratched in Gino Lombardi's earphone, weak against the background roar of solar interference. Gino lay flat in the lunar dust, half buried by the pumice-fine stuff, reaching far down into the cleft in the rock. Through the thick fabric of his suit he felt the edge crumbling and pulled hastily back. The dust and pieces of rock fell instantly, pulled down by the light lunar gravity and unimpeded by any trace of air. A fine mist of dust settled on Glazer's helmet below, partially obscuring his tortured face.

"Help me, Gino—get me out of here," he said, stretching his arm up over his head.

"No good—" Gino answered, putting as much of his weight onto the crumbling lip of rock as

he dared, reaching far down. His hand was still a good yard short of the other's groping glove. "I can't reach you—and I've got nothing here I can let down for you to grab. I'm going back to the Bug."

"Don't leave . . ." Glazer called, but his voice was cut off as Gino slid back from the crevice and scrambled to his feet. Their tiny helmet radios did not have enough power to send a signal through the rock; they were good only for line-of-sight communication.

Gino ran as fast as he could, long gliding jumps one after the other back towards the Bug. It did look more like a bug here, a red beetle squatting on the lunar landscape, its four spidery support legs sunk into the dust. He cursed under his breath as he ran: what a hell of an ending for



the first moon flight! A good blast off and a perfect orbit, the first two stages had dropped on time, the lunar orbit was right, the landing had been right—and ten minutes after they had walked out of the Bug Glazer had to fall into this crevice hidden under the powdery dust. To come all this way—through all the multiple hazards of space—then to fall into a hole . . . There was just no justice.

AT the base of the ship Gino flexed his legs and bounded high up towards the top section of the Bug, grabbing onto the bottom of the still open door of the cabin. He had planned his moves while he ran—the magnetometer would be his best bet. Pulling it from the rack he yanked at its long cable until it came free in his hand, then turned back without wasting a second. It was a long leap back to the surface—in Earth gravitational terms—but he ignored the apparent danger and jumped, sinking knee deep in the dust when he landed. The row of scuffed tracks stretched out towards the slash of the lunar crevice and he ran all the way, chest heaving in spite of the pure oxygen he was breathing. Throwing himself flat he skidded and wriggled like a snake, back to the crumbling lip.

"Get ready, Glazer," he shouted, his head ringing inside the helmet with the captive sound of his own voice. "Grab the cable . . ."

The crevice was empty. More of the soft rock had crumbled away and Glazer had fallen from sight.

For a long time Major Gino Lombardi lay there, flashing his light into the seemingly bottomless slash in the satellite's surface, calling on his radio with the power turned full on. His only answer was static, and gradually he became aware of the cold from the eternally chilled rocks that was seeping through the insulation of his suit. Glazer was gone, that was all there was to it.

After this Gino did everything that he was supposed to do in a methodical, disinterested way. He took rock samples, dust samples, meter readings, placed the recording instruments exactly as he had been shown and fired the test shot in the drilled hole. Then he gathered the records from the instruments and when the next orbit of the Apollo spacecraft brought it overhead he turned on the cabin transmitter and sent up a call.

"Come in Dan . . . Colonel Danton Coye, can you hear me. . . . ?"

"Loud and clear," the speaker crackled. "Tell me you guys, how

does it feel to be walking on the moon?"

"Glazer is dead. I'm alone. I have all the data and photographs required. Permission requested to cut this stay shorter than planned. No need for a whole day down here."

For long seconds there was a crackling silence, then Dan's voice came in, the same controlled, Texas drawl.

"Roger, Gino—stand by for computer signal, I think we can meet in the next orbit."

THE moon takeoff went as smoothly as the rehearsals had gone in the mock-up on Earth, and Gino was too busy doing double duty to have time to think about what had happened. He was strapped in when the computer radio signal fired the engines that burned down into the lower portion of the Bug and lifted the upper half free, blasting it up towards the rendezvous in space with the orbiting mother ship. The joined sections of the Apollo came into sight and Gino realized he would pass in front of it, going too fast: he made the course corrections with a sensation of deepest depression. The computer had not allowed for the reduced mass of the lunar rocket with only one passenger aboard. After this, matching orbits was not too difficult and minutes later

Gino was crawling through the entrance of the command nodule and sealing it behind him. Dan Coye stayed at the controls, not saying anything until the cabin pressure had stabilized and they could remove their helmets.

"What happened down there, Gino?"

"An accident—a crack in the lunar surface, covered lightly, sealed over by dust. Glazer just . . . fell into the thing. That's all. I tried to get him out, I couldn't reach him. I went to the Bug for some wire, but when I came back he had fallen deeper . . . it was . . ."

Gino had his face buried in his hands, and even he didn't know if he was sobbing or just shaking with fatigue and strain.

"I'll tell you a secret, I'm not superstitious at all," Dan said, reaching deep into a zippered pocket of his pressure suit. "Everybody thinks I am, which just goes to show you how wrong everybody can be. Now I got this mascot, because all pilots are supposed to have mascots, and it makes good copy for the reporters when things are dull." He pulled the little black rubber doll from his pocket, made famous on millions of TV screens, and waved it at Gino. "Everybody knows I always tote my little good-luck mascot with me, but nobody knows just what kind of good luck it has. Now *you* will

find out, Major Gino Lombardi, and be privileged to share my luck. In the first place this bitty doll is not rubber, which might have a deleterious effect on the contents, but is constructed of a neutral plastic."

In spite of himself, Gino looked up as Dan grabbed the doll's head and screwed it back.

"Notice the wrist motion as I decapitate my friend, within whose bosom rests the best luck in the world, the kind that can only be brought to you by sour mash one-hundred and fifty proof bourbon. Have a slug." He reached across and handed the doll to Gino.

"Thanks, Dan." He raised the thing and squeezed, swallowing twice. He handed it back.

"Here's to a good pilot and a good joe, Eddie Glazer," Dan Coye said raising the flask, suddenly serious. "He wanted to get to the moon and he did. It belongs to him now, all of it, by right of occupation." He squeezed the doll dry and methodically screwed the head back on and replaced it in his pocket. "Now let's see what we can do about contacting control, putting them in the picture, and start cutting an orbit back towards Earth."

GINO turned the radio on but did not send out the call yet. While they had talked their or-

bit had carried them around to the other side of the moon and its bulk successfully blocked any radio communication with Earth. They hurtled their measured arc through the darkness and watched another sunrise over the sharp lunar peaks: then the great globe of the Earth swung into sight again. North America was clearly visible and there was no need to use repeater stations. Gino beamed the signal at Cape Canaveral and waited the two and a half seconds for his signal to be received and for the answer to come back the 480,000 miles from Earth. The seconds stretched on and on, and with a growing feeling of fear he watched the hand track slowly around the clock face.

"They don't answer . . ."

"Interference, sunspots . . . try them again," Dan said in a suddenly strained voice.

The control at Canaveral did not answer the next message, nor was there any response when they tried the emergency frequencies. They picked up some aircraft chatter on the higher frequencies, but no one noticed them or paid any attention to their repeated calls. They looked at the blue sphere of Earth, with horror now, and only after an hour of sweating strain would they admit that, for some unimaginable reason, they were cut off from all radio contact with it.

"Whatever happened, happened during our last orbit around the moon. I was in contact with them while you were matching orbits," Dan said, tapping the dial of the ammeter on the radio. "There couldn't be anything wrong. . . ?"

"Not at this end," Gino said grimly. "But something has happened down there."

"Could it be . . . a war?"

"It might be. But with *whom* and why? There's nothing unusual on the emergency frequencies and I don't think . . ."

"Look!" Dan shouted hoarsely, "The lights—where are the lights?"

In their last orbit the twinkling lights of the American cities had been seen clearly through their telescope. The entire continent was now black.

"Wait, see South America—the cities are lit up there, Gino. What could possibly have happened at home while we were in that orbit?"

"There's only one way to find out. We're going back. With or without any help from ground control."

They disconnected the lunar Bug and strapped into their acceleration couches in the command module while they fed data to the computer. Following its instructions they jockeyed the Appollo into the correct attitude for firing. Once more they

orbited the airless satellite and at the correct instant the computer triggered the engines in the attached service module. They were heading home.

With all the negative factors taken into consideration, it was not that bad a landing. They hit the right continent and were only a few degrees off in latitude, though they entered the atmosphere earlier than they liked. Without ground control of any kind it was an almost miraculously good landing.

AS the capsule screamed down through the thickening air its immense velocity was slowed and the airspeed began to indicate a reasonable figure. Far below, the ground was visible through rents in the cloud cover.

"Late afternoon," Gino said. "It will be dark soon after we hit the ground."

"At least it will still be light. We could have been landing in Peking at midnight, so let's hear no complaints. Stand by to let go the parachutes."

The capsule jumped twice as the immense chutes boomed open. They opened their faceplates, safely back in the sea of air once more.

"Wonder what kind of reception we'll get?" Dan asked, rubbing the bristle on his big jaw.

With the sharp crack of split metal a row of holes appeared in

the upper quadrant of the capsule: air whistled in, equalizing their lower pressure.

"Look!" Gino shouted, pointing at the dark shape that hurtled by outside. It was egg-shaped and stub-winged, black against the afternoon sun. Then it twisted over in a climbing turn and for a long moment its silver skin was visible to them as it arched over and came diving down. Back it came, growing instantly larger, red flames twinkling in its wing roots.

Grey haze cut off the sunlight as they fell into a cloud. Both men looked at each other: neither wanted to speak first.

"A jet," Gino finally said. "I never saw that type before."

"Neither did I—but there was something familiar—Look, you saw the wings didn't you? You saw. . . ?"

"If you mean did I see black crosses on the wings, yes I did, but I'm not going to admit it! Or I wouldn't if it wasn't for those new air-conditioning outlets that were just installed in our hull. Do you have any idea what it means?"

"None. But I don't think we'll be too long finding out. Get ready for the landing—just two thousand feet to go."

THE jet did not reappear. They tightened their safety harness and braced themselves for

the impact. It was a bumping crash and the capsule tilted up on its side, jarring them with vibration.

"Parachute jettisons," Dan Coye ordered, "We're being dragged."

Gino had hit the triggers even as Dan spoke. The lurching stopped and the capsule slowly righted itself.

"Fresh air," Dan said and blew the charges on the port. It sprang away and thudded to the ground. As they disconnected the multiple wires and clasps of their suits hot, dry air poured in through the opening, bringing with it the dusty odor of the desert.

Dan raised his head and sniffed. "Smells like home. Let's get out of this tin box."

Colonel Danton Coye went first, as befitted the commander of the First American Earth-Moon Expedition. Major Gino Lombardi followed. They stood side by side silently, with the late afternoon sun glinting on their silver suits. Around them, to the limits of vision, stretched the thin tangle of greyish desert shrub, mesquite, cactus. Nothing broke the silence nor was there any motion other than that caused by the breeze that was carrying away the cloud of dust stirred up by their landing.

"Smells good, smells like Texas," Dan said, sniffing.

"Smells awful, just makes me thirsty. But . . . Dan . . . what happened? First the radio contact, then that jet . . ."

"Look, our answer is coming from over there," the big officer said, pointing at a moving column of dust rolling in from the horizon. "No point in guessing, because we are going to find out in five minutes."

It was less than that. A large, sand-colored half-track roared up, followed by two armored cars. They braked to a halt in the immense cloud of their own dust. The half-track's door slammed open and a goggled man climbed down, brushing dirt from his tight black uniform.

"*Hande hoch!*" he ordered, waving their attention to the leveled guns on the armored cars. "Hands up and keep them that way. You are my prisoners."

They slowly raised their arms as though hypnotized, taking in every detail of his uniform. The silver lightning bolts on the lapels, the high, peaked cap—the predatory eagle clasping a swastika.

"You're—you're a *German!*" Gino Lombardi gasped.

"Very observant," the officer observed humorlessly. "I am Hauptmann Langenscheidt. You are my prisoners. You will obey my orders. Get into the *kraftwagen.*"

"Now just one minute," Dan protested. "I'm Col. Coye, USAF and I would like to know what is going on here . . ."

"Get in," the officer ordered. He did not change his tone of voice, but he did pull his long-barreled Luger from its holster and leveled it at them.

"Come on," Gino said, putting his hand on Dan's tense shoulder. "You outrank him, but he got there fustest with the mostest."

They climbed into the open back of the half-track and the captain sat down facing them. Two silent soldiers with leveled machine-pistols sat behind their backs. The tracks clanked and they surged forward: stifling dust rose up around them.

GINO Lombardi had trouble accepting the reality of this. The moon flight, the landing, even Glazer's death he could accept, they were things that could be understood. But this. . . ? He looked at his watch, at the number twelve in the calendar opening.

"Just one question, Langenscheidt," he shouted above the roar of the engine. "Is today the twelfth of September?"

His only answer was a stiff nod.

"And the year—of course it is —1971?"

"Yes, of course. No more ques-

tions. You will talk to the *Oberst*, not to me."

They were silent after that, trying to keep the dust out of their eyes. A few minutes later they pulled aside and stopped while the long, heavy form of a tank transporter rumbled by them, going in the opposite direction. Evidently the Germans wanted the capsule as well as the men who had arrived in it. When the long vehicle had passed the half-track ground forward again. It was growing dark when the shapes of two large tanks loomed up ahead, cannons following them as they bounced down the rutted track. Behind these sentries was a car park of other vehicles, tents and the ruddy glow of gasoline fires burning in buckets of sand. The half-track stopped before the largest tent and at gunpoint the two astronauts were pushed through the entrance.

An officer, his back turned to them, sat writing at a field desk. He finished his work while they stood there, then folded some papers and put them into a case. He turned around, a lean man with burning eyes that he kept fastened on his prisoners while the captain made a report in rapid German.

"That is most interesting, Langenschedt, but we must not keep our guests standing. Have the orderly bring some chairs.

Gentlemen permit me to introduce myself. I am Colonel Schneider, commander of the 109th Panzer division that you have been kind enough to visit. Cigarette?"

The colonel's smile just touched the corners of his mouth, then instantly vanished. He handed over a flat package of Player's cigarettes to Gino, who automatically took them. As he shook one out he saw that they were made in England—but the label was printed in German.

"And I'm sure you would like a drink of whisky," Schneider said, flashing the artificial smile again. He placed a bottle of *Ould Highlander* on the table before them, close enough for Gino to read the label. There was a picture of the highlander himself, complete with bagpipes and kilt, but he was saying *Ich hätte gern etwas zu trinken WHISKEY!*

The orderly pushed a chair against the back of Gino's legs and he collapsed gratefully into it. He sipped from the glass when it was handed to him—it was good scotch whisky. He drained it in a single swallow.

THE orderly went out and the commanding officer settled back into his camp chair, also holding a large drink. The only reminder of their captivity was the silent form of the captain

near the entrance, his hand resting on his holstered gun.

"A most interesting vehicle that you gentlemen arrived in. Our technical experts will of course examine it, but there is a question—"

"I am Colonel Danton Coye, United States Air Force, serial number . . ."

"Please, colonel," Schneider interrupted. "We can dispense with the formalities . . ."

"Major Giovanni Lombardi, United States Air Force," Gino broke in, then added his serial number. The German colonel flickered his smile again and sipped from his drink.

"Do not take me for a fool," he said suddenly, and for the first time the cold authority in his voice matched his grim appearance. "You will talk for the Gestapo, so you might just as well talk to me. And enough of your childish games. I know there is no American Air Force, just your Army Air Corps that has provided such fine targets for our fliers. Now—what were you doing in that device?"

"That is none of your business, Colonel," Dan snapped back in the same tones. "What I would like to know is, just what are German tanks doing in Texas?"

A roar of gunfire cut through his words, sounding not too far away. There were two heavy ex-

plosions and distant flames lit up the entrance to the tent. Captain Langenscheidt pulled his gun and rushed out of the tent while the others leaped to their feet. There was a muffled cry outside and a man stepped in, pointing a bulky, strange looking pistol at them. He was dressed in stained khaki and his hands and face were painted black.

"*Verdamm . . .*" the colonel gasped and reached for his own gun: the newcomer's pistol jumped twice and emitted two sighing sounds. The panzer officer clutched his stomach and doubled up on the floor.

"Don't just stand there gaping, boys," the intruder said, "get moving before anyone else wanders in here." He led the way from the tent and they followed.

They slipped behind a row of parked trucks and crouched there while a squad of scuttl helmeted soldiers ran by them towards the hammering guns. A cannon began firing and the flames started to die down. Their guide leaned back and whispered.

"That's just a diversion—just six guys and a lot of noise—though they did get one of the fuel trucks. These krautheads are going to find it out pretty quickly and start heading back here on the double. So let's make tracks—*now!*"

HE slipped from behind the trucks and the three of them ran into the darkness of the desert. After a few yards the astronauts were staggering, but they kept on until they almost fell into an arroyo where the black shape of a jeep was sitting. The motor started as they hauled themselves into it and, without lights, it ground up out of the arroyo and bumped through the brush.

"You're lucky I saw you come down," their guide said from the front seat. "I'm Lieutenant Reeves."

"Colonel Coye—and this is Major Lombardi. We owe you a lot of thanks, lieutenant. When those Germans grabbed us, we found it almost impossible to believe. Where did they come from?"

"Breakthrough, just yesterday from the lines around Corpus. I been slipping along behind this division with my patrol, keeping San Antone posted on their movements. That's how come I saw your ship, or whatever it is, dropping right down in front of their scouts. Stars and stripes all over it. I tried to reach you first, but had to turn back before their scout cars spotted me. But it worked out. We grabbed the tank carrier as soon as it got dark and two of my walking wounded are riding it back to Cotulla where we got

some armor and transport. I set the rest of the boys to pull that diversion and you know the results. You Air Corps jockeys ought to watch which way the wind is blowing or something, or you'll have all your fancy new gadgets falling into enemy hands."

"You said the Germans broke out of Corpus—Corpus Christi?" Dan asked. "What are they doing there—how long have they been there—or where did they come from in the first place?"

"You flyboys must sure be stationed in some hideaway spot," Reeves said, grunting as the jeep bounded over a ditch. "The landings on the Texas side of the Gulf were made over a month ago. We been holding them, but just barely. Now they're breaking out and we're managing to stay ahead of them." He stopped and thought for a moment. "Maybe I better not talk to you boys too much until we know just what you were doing there in the first place. Sit tight and we'll have you out of here inside of two hours."

The other jeep joined them soon after they hit a farm road and the lieutenant murmured into the field radio it carried. Then the two cars sped north, past a number of tank traps and gun emplacements and finally

into the small town of Cotula, straddling the highway south of San Antonio. They were led into the back of the local supermarket where a command post had been set up. There was a lot of brass and armed guards about, and a heavy-jawed one star general behind the desk. The atmosphere and the stares was reminiscent in many ways of the German colonel's tent.

"Who are you two, what are you doing here—and what is that *thing* you rode down in?" the general asked in a no-nonsense voice.

Dan had a lot of questions he wanted to ask first, but he knew better than to argue with a general. He told about the moon flight, the loss of communication, and their return. Throughout the general looked at him steadily, nor did he change his expression. He did not say a word until Dan was finished. Then he spoke.

"Gentlemen, I don't know what to make of all your talk of rockets, moon-shots, Russian sputniks or the rest. Either you are both mad or I am, though I admit you have an impressive piece of hardware out on that tank carrier. I doubt if the Russians have time or resources now for rocketry, since they are slowly being pulverized and pushed back across Siberia. Every other country in Europe has fallen to

the Nazis and they have brought their war to this hemisphere, have established bases in Central America, occupied Florida and made more landings along the Gulf coast. I can't pretend to understand what is happening here so I'm sending you off to the national capitol in Denver in the morning."

IN the plane next day, somewhere over the high peaks of the Rockies, they pieced together part of the puzzle. Lieutenant Reeves rode with them, ostensibly as a guide, but his pistol was handy and the holster flap loose.

"It's the same date and the same world that we left," Gino explained, "but some things are *different*. Too many things. It's all the same up to a point, then changes radically. Reeves, didn't you tell me that President Roosevelt died during his first term?"

"Pneumonia, he never was too strong, died before he had finished a year in office. He had a lot of wild-sounding schemes but they didn't help. Vice-president Garner took over, but it didn't seem the same when John Nance said it as when Roosevelt had said it. Lot's of fights, trouble in congress, depression got worse, and things didn't start getting better until about '36 when Landon was elected. There

were still a lot of people out of work, but with the war starting in Europe they were buying lots of things from us, food, machines, even guns."

"Britain and the allies, you mean?"

"I mean everybody, Germans too, though that made a lot of people here mad. But the policy was no-foreign-entanglements and do business with anyone who's willing to pay. It wasn't until the invasion of Britain that people began to realize that the Nazis weren't the best customers in the world, but by then it was too late."

"It's like a mirror image of the world—a warped mirror," Dan said, drawing savagely on his cigarette. "While we were going around the moon something happened to change the whole world to the way it would have been if history had been altered some time in the early thirties."

"World didn't change, boys," Reeves said, "it's always been just the way it is now. Though I admit the way you tell it it sounds a lot better. But it's either the whole world or you, and I'm banking on the simpler of the two. Don't know what kind of an experiment the Air Corps had you two involved in but it must have added your grey matter."

"I can't buy that," Gino in-

sisted. "I know I'm beginning to feel like I have lost my marbles, but whenever I do I think about the capsule we landed in. How are you going to explain that away?"

"I'm not going to try. I know there are a lot of gadgets and things that got the engineers and the university profs tearing their hair out, but that doesn't bother me. I'm going back to the shooting war where things are simpler. Until it is proved differently I think that you are both nuts, if you'll pardon the expression, sirs."

THE official reaction in Denver was basically the same. A staff car, complete with MP outriders, picked them up as soon as they had landed at Lowry Field and took them directly to Fitzsimmons Hospital. They were taken directly to the laboratories and what must have been a good half of the giant hospital's staff took turns prodding, questioning and testing them. They were encouraged to speak—many times with lie-detector instrumentation attached to them—but none of their questions were answered. Occasional high-ranking officers looked on gloomily, but took no part in the examination. They talked for hours into tape recorders, answering questions in every possible field from history to phys-

ics, and when they tired were kept going on benzedrine. There was more than a week of this in which they saw each other only by chance in the examining rooms, until they were weak from fatigue and hazy from the drugs. None of their questions were answered, they were just reassured that everything would be taken care of as soon as the examinations were over. When the interruption came it was a welcome surprise, and apparently unexpected. Gino was being probed by a drafted history professor who wore oxidized captain's bars and a gravy-stained battlejacket. Since his voice was hoarse from the days of prolonged questioning, Gino held the microphone close to his mouth and talked in a whisper.

"Can you tell me who was the Secretary of the Treasury under Lincoln?" the captain asked.

"How the devil should I know? And I doubt very much if there is anyone else in this hospital who knows—besides you. And do you know?"

"Of course—"

The door burst open and a full colonel with an MP brassard looked in. A very high-ranking messenger boy: Gino was impressed.

"I've come for Major Lombardi."

"You'll have to wait," the history-captain protested, twisting

his already rumpled necktie. "I've not finished. . . ."

"That is not important. The major is to come with me at once."

They marched silently through a number of halls until they came to a dayroom where Dan was sprawled deep in a chair smoking a cigar. A loudspeaker on the wall was muttering in a monotone.

"Have a cigar," Dan called out, and pushed the package across the table.

"What's the drill now?" Gino asked, biting off the end and looking for a match.

"Another conference, big brass, lots of turmoil. We'll go in in a moment as soon as some of the shouting dies down. There is a theory now as to what happened, but not much agreement on it even though Einstein himself dreamed it up . . ."

"Einstein! But he's dead . . ."

"Not now he isn't, I've seen him. A grand old gent of over ninety, as fragile as a stick but still going strong. He . . . say, wait—isn't that a news broadcast?"

THEY listened to the speaker that one of the MP's had turned up.

". . . in spite of fierce fighting the city of San Antonio is now in enemy hands. Up to an hour ago there were still reports

from the surrounded Alamo where units of the 5th Cavalry have refused to surrender, and all America has been following this second battle of the Alamo. History has repeated itself, tragically, because there now appears to be no hope that any survivors . . ."

"Will you gentlemen please follow me," a staff officer broke in, and the two astronauts went out after him. He knocked at a door and opened it for them. "If you please."

"I am very happy to meet you both," Albert Einstein said, and waved them to chairs.

He sat with his back to the window, his thin, white hair catching the afternoon sunlight and making an aura about his head.

"Professor Einstein," Dan Coye said, "can you tell us what has happened? What has changed?"

"Nothing has changed, that is the important thing that you must realize. The world is the same and you are the same, but you have—for want of a better word I must say—*moved*. I am not being clear. It is easier to express in mathematics."

"Anyone who climbs into a rocket has to be a bit of a science fiction reader, and I've absorbed my quota," Dan said. "Have we got into one of those parallel worlds things they used

to write about, branches of time and all that?"

"No, what you have done is *not* like that, though it may be a help to you to think of it that way. This is the same *objective* world that you left—but not the same *subjective* one. There is only one galaxy that we inhabit, only one universe. But our awareness of it changes many of its aspects of reality."

"You've lost me," Gino sighed.

"Let me see if I get it," Dan said. "It sounds like you are saying that things are just as we think we see them, and our thinking keeps them that way. Like that tree in the quad I remember from college."

"Again, not correct, but an approximation you may hold if it helps you to clarify your thinking. It is a phenomenon that I have long suspected, certain observations in the speed of light that might be instrumentation errors, gravitic phenomena, chemical reactions. I have suspected something, but have not known where to look. I thank you gentlemen from the bottom of my heart for giving me this opportunity at the very end of my life, for giving me the clues that may lead to a solution to this problem."

"Solution . . ." Gino's mouth opened. "Do you mean there is a chance we can go back to the world as we knew it?"

"Not only a chance—but the strongest possibility. What happened to you was an accident. You were away from the planet of your birth, away from its atmospheric envelope and, during parts of your orbit, even out of sight of it. Your sense of reality was badly strained, and your physical reality and the reality of your mental relationships changed by the death of your comrade. All these combined to allow you to return to a world with a slightly different aspect of reality from the one you have left. The historians have pinpointed the point of change. It occurred on the seventeenth of August, 1933, the day that President Roosevelt died of pneumonia."

"Is that why all those medical questions about my childhood?" Dan asked. "I had pneumonia then, I was just a couple of months old, almost died, my mother told me about it often enough afterwards. It could have been at the same time. It isn't possible that I lived and the president died. . . ?"

Einstein shook his head. "No, you must remember that you both lived in the world as you knew it. The dynamics of the relationship are far from clear, though I do not doubt that there is some relationship involved. But that is not important. What is important is that I think I

have developed a way to mechanically bring about the translation from one reality aspect to another. It will take years to develop it to translate matter from one reality to a different order, but it is perfected enough now—I am sure—to return matter that has already been removed from another order."

GINO's chair scraped back as he jumped to his feet. "Professor—am I right in saying, and I may have got you wrong, that you can take us and pop us back to where we came from?"

Einstein smiled. "Putting it as simply as you have, major . . . the answer is *yes*. Arrangements are being made now to return both of you and your capsule as soon as possible. In return for which we ask you a favor."

"Anything, of course," Dan said, leaning forward.

"You will have the reality-translator machine with you, and microcopies of all our notes, theories and practical conclusions. In the world that you come from all of the massive forces of technology and engineering can be summoned to solve the problem of mechanically accomplishing what you both did once by accident. You might be able to do this within months, and that is all the time that there is left."

"Exactly what do you mean?"

"We are losing the war. In spite of all the warning we were not prepared, we thought it would never come to us. The Nazis advance on all fronts. It is only a matter of time until they win. We can still win, but only with your atom bombs."

"You don't have atomic bombs now?" Gino asked.

Einstein sat silent for a moment before he answered. "No, there was no opportunity. I have always been sure that they could be constructed, but have never put it to the test. The Germans felt the same, and at one time even had a heavy water project that aimed towards controlled nuclear fission. But their military successes were so great that they abandoned it along with other far-fetched and expensive schemes such as the hollow-globe theory. I myself have never wanted to see this hellish thing built, and from what you have told about it, it is worse than my most terrible dream. But I have approached the President about it, when the Nazi threat was closing in, but nothing was done. Too expensive. Now it is too late. But perhaps it isn't. If *your* America will help us, the enemy will be defeated. And after that, what a wealth of knowledge we shall have once our worlds are in contact. Will you do it?"

"Of course," Dan Coye said. "But the brass will take a lot of convincing. I suggest some films be made of you and others explaining some of this. And enclose some documents, anything that will help convince them what has happened."

"I can do something better," Einstein said, taking a small bottle from a drawer of the table. "Here is a recently developed drug, and the formula, that has proved effective in arresting certain of the more violent forms of cancer. This is an example of what I mean by the profit that can accrue when our two worlds can exchange information."

Dan pocketed the precious bottle as they turned to leave. With a sense of awe they gently shook hands with the frail old man who had been dead many years in the world they knew, to which they would be soon returning.

THE military moved fast. A large jet bomber was quickly converted to carry one of the American solid-fuel rocket missiles. Not yet operational, it was doubtful if they ever would be at the rate of the Nazi advance. But given an aerial boost by the bomber it could reach up out of the ionosphere—carrying the payload of the moon capsule with its two pilots. Clearing the fringes of the atmosphere was essential to the operation of the

instrument that was to return them to what they could only think of as their own world. It seemed preposterously tiny to be able to change worlds.

"Is that *all*?" Gino asked when they settled themselves back into the capsule. A square case, containing records and reels of film, was strapped between their seats. On top of it rested a small grey metal box.

"What do you expect—an atom smasher?" Dan asked, checking out the circuits. The capsule had been restored as much as was possible to the condition it was in the day it had landed. The men wore their pressure suits. "We came here originally by accident, by just thinking wrong or something like that, if my theory's correct."

"It isn't—but neither is mine, so we can't let it bug us."

"Yeah, I see what you mean. The whole crazy business may not be simple, but the mechanism doesn't have to be physically complex. All we have to do is throw the switch, right?"

"Roger. The thing is self-powered. We'll be tracked by radar, and when we hit apogee in our orbit they'll give us a signal on our usual operating frequency. We throw the switch—and drop."

"Drop right back to where we came from, I hope."

"Hello there cargo," a voice

crackled over the speaker. "Pilot here. We are about to take off. All set?"

"In the green, all circuits," Dan reported, and settled back.

The big bomber rumbled the length of the field and slowly pulled itself into the air, heavily under the weight of the rocket slung beneath its belly. The capsule was in the nose of the rocket and all the astronauts could see was the shining skin of the mother ship. It was a rough ride. The mathematics had indicated that probability of success would be greater over Florida and the south Atlantic, the original re-entry target. This meant penetrating enemy territory. The passengers could not see the battle being fought by the accompanying jet fighters, and the pilot of the converted bomber did not tell them. It was a fierce battle and at one point almost a lost one: only a suicidal crash by one of the escort fighters prevented an enemy jet from attacking the mother ship.

"Stand by for drop," the radio said, and a moment later came the familiar sensation of free fall as the rocket cropped clear of the plane. Pre-set controls timed the ignition and orbit. Acceleration pressed them into their couches.

A SUDDEN return to weightlessness was accompanied

by the tiny explosions as the carrying-rocket blasted free the explosive bolts that held it to the capsule. For a measureless time their inertia carried them higher in their orbit while gravity tugged back. The radio crackled with a carrier wave, then a voice broke in.

"Be ready with the switch . . . ready to throw it . . . NOW!"

Dan flipped the switch and nothing happened. Nothing that they could perceive in any case. They looked at each other silently, then at the altimeter as they dropped back towards the distant Earth.

"Get ready to open the chute," Dan said heavily, just as a roar of sound burst from the radio.

"Hello Apollo, is that you? This is Canaveral control, can you hear me? Repeat—can you hear me? Can you answer . . . in heaven's name, Dan, are you there . . . are you there. . . ?"

The voice was almost hysterical, bubbling over itself. Dan flipped the talk button.

"Dan Coye here—is that you, Skipper?"

"Yes—but how did you get there? Where have you been since . . . Cancel, repeat cancel that last. We have you on the screen and you will hit in the sea and we have ships standing by . . ."

The two astronauts met each

other's eyes and smiled. Gino raised his thumb up in a token of victory. They had done it. Behind the controlled voice that issued them instructions they could feel the riot that must be breaking after their unexpected arrival. To the observers on Earth—*this* Earth—they must have vanished on the other side of the moon. Then reappeared suddenly some weeks later, alive and sound long days after their oxygen and supplies should have been exhausted. There would be a lot to explain.

It was a perfect landing. The sun shone, the sea was smooth, there was scarcely any cross wind. They resurfaced within seconds and had a clear view through their port over the small waves. A cruiser was already headed their way, only a few miles off.

"It's over," Dan said with an immense sigh of relief as he unbuckled himself from the chair.

"Over!" Gino said in a choking voice. "Over? Look—look at the flag, there!"

The cruiser turned tightly, the flag on its stern standing out proudly in the air. The red and white stripes of Old Glory, the fifty white stars on the field of deepest blue.

And in the middle of the stars, in the center of the blue rectangle, lay a golden crown.

THE END

*That once stand-by President, Maximilian,
Gets his come-uppance from a man in a million
Sebastian Hada schemes, says: Hark!—*

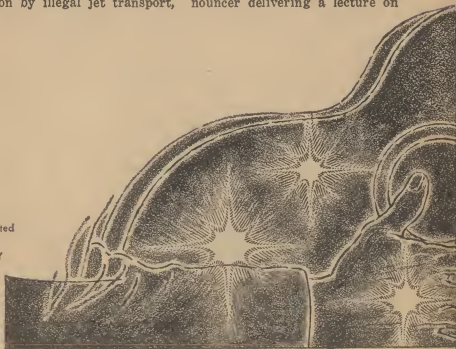
What'll We Do With Ragland Park?

By PHILIP K. DICK

IN his demesne near the logging town of John Day, Oregon, Sebastian Hada thoughtfully ate a grape as he watched the TV screen. The grapes, flown to Oregon by illegal jet transport,

came from one of his farms in the Sonoma Valley of California. He spat the seeds into the fireplace across from him, half-listening to his CULTURE announcer delivering a lecture on

Illustrated
by
FINLAY





the portrait busts of twentieth century sculptors.

If only I could get Jim Briskin on my network, Hada thought gloomily. The ranking TV news clown, so popular with his flaming scarlet wig and genial, informal patter . . . CULTURE needs that, Hada realized. But—

But their society, at the moment, was being run by the idiotic—but peculiarly able—President Maximilian Fischer, who had locked horns with Jim-Jam Briskin; who had, in fact, clapped the famous news clown in jail. So as a result, Jim-Jam was available neither for the commercial network which linked the three habitable planets nor for CULTURE. And meanwhile, Max Fischer ruled on.

If I could get Jim-Jam out of prison, Hada thought, perhaps due to gratitude he'd move over to my network, leave his sponsors Reinlander Beer and Calbest Electronics; after all, they have not been able to free him despite their intricate court maneuvers. They don't have the power or the know-how . . . *and I have.*

One of Hada's wives, Thelma, had entered the living room of the demesne and now stood watching the TV screen from behind him. "Don't place yourself there, please," Hada said. "It gives me a panic reaction; I like to see people's faces." He twisted around in his deep chair.

"The fox is back," Thelma said. "I saw him; he glared at me." She laughed with delight. "He looked so feral and independent—a bit like you, Seb. I wish I could have gotten a film-clip of him."

"I must spring Jim-Jam Briskin," Hada said aloud; he had decided.

PICKING up the phone he dialed CULTURE's production chief, Nat Kaminsky, at the transmitting Earth satellite Cullone.

"In exactly one hour," Hada told his employee, "I want all our outlets to begin crying for Jim-Jam Briskin's release from jail. He's not a traitor, as President Fischer declares. In fact, his political rights, his freedom of speech, have been taken away from him—illegally. Got it? Show clips of Briskin, build him up . . . you understand." Hada hung up, then, and dialed his attorney, Art Heaviside.

Thelma said, "I'm going back outdoors and feed the animals."

"Do that," Hada said, lighting an *Abdulla*, a British-made Turkish cigarette which he was most fond of. "Art?" he said into the phone. "Get started on Jim-Jam Briskin's case; find a way to free him."

His lawyer's voice came protestingly, "But Seb, if we mix into that we'll have President

Fischer after us with the FBI; it's too risky."

Hada said, "I need Briskin. CULTURE has become pompous—look at the screen right this minute. Education and art—we need a *personality*, a good news clown; we need Jim-Jam." Tel-scan's surveys, of late, had shown an ominous dropping-off of viewers, but he did not tell Art Heavyside that; it was confidential.

Sighing, the attorney said, "Will do, Seb. But the charge against Briskin is sedition in time of war."

"Time of war? With whom?"

"Those alien ships—you know. That entered the Sol System last February. Darn it, Seb; you know we're at war—you can't be so lofty as to deny that, it's a legal fact."

"In my opinion," Hada said, "the aliens are not hostile." He put the receiver down, feeling angry. It's Max Fischer's way of holding onto supreme power, he said to himself. Thumping the war-scare drum. I ask you, what *actual* damage have the aliens done lately? After all, we don't own the Sol System. We just like to think we do.

In any case, CULTURE—educational TV itself—was withering, and as the owner of the network, Sebastian Hada had to act. Am I personally declining in vigor? he asked himself.

Once more picking up the phone he dialed his analyst, Doctor Ito Yasumi, at his demeane outside of Tokio. I need help, he said to himself. CULTURE's creator and financial backer needs help. And Dr. Yasumi can give it to me.

FACING him across his desk, Dr. Yasumi said, "Hada, maybe problem stems from you having eight wives. That's about five too many." He waved Hada back to the couch. "Be calm, Hada. Pretty sad that big-time operator like Mr. S. Hada falling apart under stress. You afraid President Fischer's FBI get you like they got Jim Briskin?" He smiled.

"No," Hada said. "I'm fearless." He lay semi-supine, arms behind his head, gazing at a Paul Klee print on the wall . . . or perhaps it was an original; good analysts did make a god-awful amount of money: Yasumi's charge to him was one thousand dollars a half hour.

Yasumi said contemplatively, "Maybe you should seize power, Hada, in bold coup against Max Fischer. Make successful power-play of your own; become President and then release Mr. Jim-Jam—no problem, then."

"Fischer has the Armed Forces behind him," Hada said gloomily. "As Commander-in-Chief. Because of General Tomp-

kins, who likes Fischer, they're absolutely loyal." He had already thought of this. "Maybe I ought to flee to my demesne on Callisto," he murmured. It was a superb one, and Fischer, after all, had no authority there; it was not U.S. but Dutch territory. "Anyhow I don't want to fight; I'm not a fighter, a street-brawler; I'm a cultured man."

"You are bio-physical organism with built-in responses; you are alive. All that lives strives to survive. You will fight if necessary, Hada."

Looking at his watch, Hada said, "I have to go, Ito. At three I've an appointment in Havana to interview a new folk singer, a ballad and banjo man who's sweeping Latin America. Ragland Park is his name; he can bring life back into CULTURE."

"I know of him," Ito Yasumi said. "Saw him on commercial TV; very good performer. Part Southern U.S., part Dane, very young with huge black mustache and blue eyes. Magnetic, this Rags, as is called."

"But is folk-singing cultural?" Hada murmured.

"I tell you something," Dr. Yasumi said. "There strangeness about Rags Park; I noted even over TV. Not like other people."

"That's why he's such a sensation."

"More than that. I diagnose." Yasumi reflected. "You know

mental illness and psionic powers closely related, as in poltergeist effect. Many schizophrenics of paranoid variety are telepaths, picking up hate-thoughts in subconscious of persons around them."

"I know," Hada sighed, thinking that this was costing him hundreds of dollars, this spouting of psychiatric theory.

"Go careful with Rags Park," Dr. Yasumi cautioned. "You volatile type, Hada; jump too quick. First idea of springing Jim-Jam Briskin—risking FBI wrath—and now this Rags Park. You like hat-designer or human flea. Best bet, as I say, is to openly face President Fischer, not deviousness as I foresee you doing."

"'Devious'?" Hada murmured. "I'm not devious."

"You most devious patient I got," Dr. Yasumi told him bluntly. "You got nothing but tricky bones in your body, Hada. Watch out or you scheme yourself out of existence." He nodded with great soberness.

"I'll go carefully," Hada said, his mind on Rags Park; he barely heard what Dr. Yasumi was telling him.

"A favor," Dr. Yasumi said. "When you can arrange, let me examine Mr. Park; I would enjoy, okay? For your good, Hada, as well as professional interest. Psi talent may be of new kind; one never knows."

"Okay," Hada agreed. "I'll give you a call." But, he thought, I'm not going to pay for it; your examination of Rags Park will be on your own time.

THERE was an opportunity before his appointment with the ballad singer Rags Park to drop by the Federal prison in New York at which Jim-Jam Briskin was being held on the sedition in time of war charge.

Hada had never met the news clown face to face, and he was surprised to discover how much older the man looked than on the TV. But perhaps Briskin's arrest, his troubles with President Fischer, had temporarily overwhelmed him. It would be enough to overwhelm anyone, Hada reflected as the deputy unlocked the cell and admitted him.

"How did you happen to tangle with President Fischer?" Hada asked.

The news clown shrugged and said, "You lived through that period in history as much as I did." He lit a cigarette and stared woodenly past Hada.

He was referring, Hada realized, to the demise of the great problem-solving computer at Washington D.C., Unicephalon 40-D; it had ruled as President of the United States and Commander-in-Chief of the Armed Forces until a missile, delivered by the alien ships, had put it out

of action. During that period the stand-by President, Max Fischer, had taken power, a clod appointed by the union, a primitive man with an unnatural bucolic cunning. When at last Unicephalon 40-D had been repaired and had resumed functioning, it had ordered Fischer to depart his office and Jim Briskin to cease political activity. Neither man had complied. Briskin had gone on campaigning against Max Fischer, and Fischer had managed, by some method still unknown, to disable the computer, thereby again becoming President of the United States.

And his initial act had been to clap Jim-Jam in jail.

"Has Art Heaviside, my attorney, seen you?" Hada asked.

"No," Briskin said shortly.

"Listen, my friend," Hada said, "without my help you'll be in prison forever, or at least until Max Fischer dies. This time he isn't making the mistake of allowing Unicephalon 40-D to be repaired; it's out of action for good."

Briskin said, "And you want me on your network in exchange for getting me out of here." He smoked rapidly at his cigarette.

"I need you, Jim-Jam," Hada said. "It took courage for you to expose President Fischer for the power-hungry buffoon he is; we've got a terrible menace hanging over us in Max Fischer, and

if we don't join together and work fast it'll be too late; we'll both be dead. You know—in fact you said it on TV—that Fischer would gladly stoop to assassination to get what he wants.”

Briskin said, “Can I say what I want over your facilities?”

“I give you absolute freedom. Attack anyone you want, including me.”

After a pause, Briskin said, “I’d take your offer, Hada . . . but I doubt if even Art Heavyside can get me out of here. Leon Lait, Fischer’s Attorney General, is conducting the prosecution against me personally.”

“Don’t resign yourself,” Hada said. “Billions of your viewers are waiting to see you emerge from this cell. At this moment all my outlets are clamoring for your release. Public pressure is building up. Even Max will have to listen to that.”

“What I’m afraid of is that an ‘accident’ will happen to me,” Briskin said. “Just like the ‘accident’ that befell Unicephalon 40-D a week after it resumed functioning. If it couldn’t save itself, how can—”

“You afraid?” Hada inquired, incredulous. “Jim-Jam Briskin, the ranking news clown—I don’t believe it!”

THERE was silence.

Briskin said, “The reason my sponsors, Reinlander Beer

and Calbest Electronics, haven’t been able to get me out is—” He paused. “Pressure put on them by President Fischer. Their attorneys as much as admitted that to me. When Fischer learns you’re trying to help me, he’ll bring all the pressure he has to bear directly on you.” He glanced up acutely at Hada. “Do you have the stamina to endure it? I wonder.”

“Certainly I have,” Hada said. “As I told Dr. Yasumi—”

“And he’ll put pressure on your wives,” Jim-Jam Briskin said.

“I’ll divorce all eight of them,” Hada said hotly.

Briskin held out his hand and they shook. “It’s a deal, then,” Jim-Jam said. “I’ll go to work for CULTURE as soon as I’m out of here.” He smiled in a weary but hopeful way.

Elated, Hada said, “Have you ever heard of Rags Park, the folk and ballad singer? At three today I’m signing him, too.”

“There’s a TV set here and now and then I catch one of Park’s numbers,” Briskin said. “He sounds good. But do you want that on CULTURE? It’s hardly educational.”

“CULTURE is changing. We’re going to sugar-coat our didacticisms from now on. We’ve been losing our audience. I don’t intend to see CULTURE wither away. The very concept of it—”

The word CULTURE stood for Committee Utilizing Learning Techniques for Urban Renewal Efforts. A major part of Hada's real estate holdings consisted of the city of Portland, Oregon, which he had acquired—intact—ten years ago. It was not worth much; typical of the semi-abandoned slum constellations which had become not only repellent but obsolete, Portland had a certain sentimental value to him because he had been born there.

However, one notion lingered in his mind. If for any reason the colonies on the other planets and moons had to be abandoned, if the settlers came streaming back to Earth, the cities would be repopulated once more. And with the alien ships flitting about the further planets, this was not as implausible as it sounded. In fact, a few families had emigrated back to Earth already . . .

So underneath, CULTURE was not quite the disinterested public-service non-profit agency that it appeared. Mixed in with the education, Hada's outlets drummed away at the seductive idea of *the city*, how much it could offer, how little there was to be had in the colonies. Give up the difficult, crude life of the frontier, CULTURE declared night and day. Return to your own planet; repair the decaying cities. They're your real home.

Did Briskin know this? Hada

wondered. Did the news clown understand the actual purpose of his organization?

Hada would find that out—if and when he managed to get Briskin out of jail and before a CULTURE microphone.

AT three o'clock Sebastian Hada met the folk singer Ragland Park at the Havana office of CULTURE.

"I'm glad to make your acquaintance," Rags Park said shyly. Tall, skinny, with his huge black mustache hiding most of his mouth, he shuffled about self-consciously, his blue eyes gentle with authentic friendliness. He had an unusual sweetness about him, Hada noted. Almost a saintly quality. Hada found himself impressed.

"And you play both the guitar and the five-string banjo?" Hada said. "Not at once, of course."

Rags Park mumbled, "No sir. I alternate. Want me to play something right now for you?"

"Where were you born?" Nat Kaminsky asked. Hada had brought his production chief along; in matters such as this Kaminsky's opinion was valuable.

"In Arkansas," Rags answered. "My family raises hogs." He had his banjo with him and now, nervously, he twanged a few notes. "I know a real sad song that'll break your heart. It's

called 'Poor Old Hoss.' Want me to sing it for you?"

"We've heard you," Hada said. "We know you're good." He tried to imagine this awkward young man twanging away over CULTURE, in between lectures on twentieth century portrait sculptors. Hard to imagine . . .

Rags said, "I bet there's one thing you don't know about me, Mr. Hada. I make up a lot of my own ballads."

"Creative," Kaminsky said to Hada straight-faced. "That's good."

"For instance," Rags continued, "I once made up a ballad about a man named Tom McPhail who ran ten miles with a bucket of water to put out the fire in his little daughter's crib."

"Did he make it?" Hada asked.

"Sure did. Just in time. Tom McPhail ran faster and faster with that bucket of water." Chanting, Rags twanged in accompaniment. "Here comes Tom McPhail, holdin' on tight to that great little pail . . . holdin' on tight, boys, here he come, heart full of fear, faculties numb." Twang, twang, sounded the bannjo, mournfully and urgently.

Kaminsky said acutely, "I've been following your shows and I've never heard you sing that number."

"Aw," Rags said, "I had bad luck with that, Mr. Kaminsky. Turned out there really is a Tom

McPhail. Lives in Pocatello, Idaho. I sang about ol' Tom McPhail on my January 14th TV show and right away he got sore—he was listenin'—and got a lawyer to write me."

"Wasn't it just a coincidence in names?" Hada said.

"Well," Rags said, twisting about self-consciously, "it seems there really had been a fire in his home there in Pocatello, and McPhail, he got panicky and ran with a bucket to the creek, and it was ten miles off, like I said in the song."

"Did he get back with the water in time?"

"Amazingly, he did," Rags said.

Kaminsky said to Hada, "It would be better, on CULTURE, if this man stuck to authentic old English ballads such as 'Green-sleeves.' That would seem more what we want."

THOUGHTFULLY, Hada said to Rags, "Bad luck to pick a name for a ballad and have it turn out that such a man really exists . . . have you had that sort of bad luck since?"

"Yes I have," Rags admitted. "I made up a ballad last week . . . it was about a lady, Miss Marsha Dobbs. Listen.

"All day, all night, Marsha Dobbs.

Loves a married man whose wife she robs.

Robs that wife and hearth of Jack Cooks' heart.

Steals the husband, makes that marriage fall apart.

"That's the first verse," Rags explained. "It goes on for seventeen verses; tells how Marsha comes to work at Jack Cooks' office as a secretary, goes to lunch with him, then later they meet late at—"

"Is there a moral at the end?" Kaminsky inquired.

"Oh sure," Rags said. "Don't take no one else's man because if you do, heaven avenges the dishonored wife. In this case:

"Virus flu lay 'round the corner just for Jack.

For Marsha Dobbs 'twas to be worse, a heart attack. Miz Cooks, the hand of heaven sought to spare.

Surrounded her, became a garment strong to wear.

Miz Cooks—"

Hada broke in over the twanging and singing, "That's fine, Rags. That's enough." He glanced at Kaminsky and winced.

"And I bet it turned out," Kaminsky said, "that there's a real Marsha Dobbs who had an affair with her boss, Jack Cooks."

"Right," Rags said, nodding. "No lawyer called me, but I read it in the homeopape, the New York Times. Marsha, she died of a heart attack, and it was actually during—" He hesitated modestly. "You know. While she and

Jack Cooks were at a motel satellite, love-making."

"Have you deleted that number from your repertoire?" Kaminsky asked.

"Well," Rags said, "I can't make up my mind. Nobody's suing me . . . and I like the ballad. I think I'll leave it in."

To himself, Hada thought, What was it Dr. Yasumi said? That he scented psi-powers of some unusual kind in Ragland Park . . . perhaps it's the parapsychological power of having the bad luck to make up ballads about people who really exist. Not much of a talent, that.

On the other hand, he realized, it could be a variant on the telepathic talent . . . and with a little tinkering it might be *quite* valuable.

"How long does it take you to make up a ballad?" he asked Rags.

"I can do it on the spot," Rags Park answered. "I could do it now; give me a theme and I'll compose right here in this office of yours."

HADA pondered and then said, "My wife Thelma has been feeding a gray fox that I know—or I believe—killed and ate our best Rouen duck."

After a moment of considering, Rags Park twanged:

Miz Thelma Hada talked to the fox,

Built it a home from an old pine box.

Sebastian Hada heard a sad cluck:

Wicked gray fox had eaten his duck."

"But ducks don't cluck, they quack," Nat Kaminsky said critically.

"That's a fact," Rags admitted. He pondered and then sang:

"Hada's production chief changed my luck.

I got no job, and ducks don't cluck."

Grinning, Kaminsky said, "Okay, Rags; you win." To Hada he said, "I advise you to hire him."

"Let me ask you this," Hada said to Rags. "Do *you* think the fox got my Rouen?"

"Gosh," Rags said, "I don't know anything about that."

"But in your ballad you said so," Hada pointed out.

"Let me think," Rags said. Presently he twanged once more and said:

"Interesting problem Hada's stated.

Perhaps my ability's underrated.

Perhaps I'm not no ordinary guy.

Do I get my ballads through the use of psi?"

"How did you know I meant psi?" Hada asked. "You can read interior thoughts, can't you? Yasumi was right."

Rags said, "Mister, I'm just singing and twanging; I'm just an entertainer, same as Jim-Jam Briskin, that news clown President Fischer clapped in jail."

"Are you afraid of jail?" Hada asked him bluntly.

"President Fischer doesn't have nothing against me," Rags said. "I don't do political ballads."

"If you work for me," Hada said, "maybe you will. I'm trying to get Jim-Jam out of jail; today all my outlets began their campaign."

"Yes, he ought to be out," Rags agreed, nodding. "That was a bad thing, President Fischer using the FBI for that . . . those aliens aren't that much of a menace."

Kaminsky, rubbing his chin meditatively, said, "Do one on Jim-Jam Briskin, Max Fischer, the aliens—on the whole political situation. Sum it up."

"That's asking a lot," Rags said, with a wry smile.

"Try," Kaminsky said. "See how well you can epitomize."

"Whooee," Rags said. "'Epitomize.' Now I know I'm talking to CULTURE. Okay, Mr. Kaminsky. How's this?" He sang:

"Fat little President by name
of Max

Used his power, gave Jim
the ax.

Sebastian Hada's got eyes
like a vulture.

Sees his opening, steps in with CULTURE."

"You're hired," Hada said to the folk singer, and reached into his pocket for a contract form.

Kaminsky said, "Will we be successful, Mr. Park? Tell us about the outcome."

"I'd, uh, rather not," Rags said. "At least not this minute. You think I can also read the future, too? That I'm a pre-cog as well as a telepath?" He laughed gently. "I've got plenty of talent, according to you; I'm flattered." He bowed mockingly.

"I'll assume that you're coming to work for us," Hada said. "And your willingness to be an employee of CULTURE—is it a sign that you feel President Fischer is not going to be able to get us?"

"Oh, we could be in jail, too, along with Jim-Jam," Rags murmured. "That wouldn't surprise me." Seating himself his banjo in hand, he prepared to sign the contract.

IN his bedroom at the White House, President Max Fischer had listened for almost an hour now to the TV set, to CULTURE hammering away on the same topic, again and again. *Jim Briskin must be released*, the voice said; it was a smooth, professional announcer's voice, but behind it unheard, Max knew, was Sebastian Hada.

"Attorney General," Max said to his cousin Leon Lait, "get me dossiers on all of Hada's wives, all seven or eight, whatever it is. I guess I got to take a drastic course."

When, later in the day, the eight dossiers had been put before him, he began to read carefully, chewing on his El Producto *alta* cigar and frowning, his lips moving with the effort of comprehending the intricate, detailed material.

Jeez, what a mess some of these dames must be, he realized. Ought to be getting chemical psychotherapy, have their brain metabolisms straightened out. But he was not displeased; it had been his hunch that a man like Sebastian Hada would attract an unstable sort of woman.

One in particular, Hada's fourth wife, interested him. Zoe Martin Hada, thirty-one years old, now living on Io with her ten-year-old son.

Zoe Hada had definite psychotic traits.

"Attorney General," he said to his cousin, "this dame is living on a pension supplied by the U.S. Department of Mental Health. Hada isn't contributing a dime to her support. You get her here to the White House, you understand? I got a job for her."

The following morning Zoe Martin Hada was brought to his office.

He saw, between the two FBI men, a scrawny woman, attractive, but with wild, animosity-filled eyes. "Hello, Mrs. Zoe Hada," Max said. "Listen, I know sumpthin about you; you're the only genuine Mrs. Hada—the others are impostors, right? And Sebastian's done you dirt." He waited, and saw the expression on her face change.

"Yes," Zoe said. "I've been in courts for six years trying to prove what you just said. I can hardly believe it; are you really going to help me?"

"Sure," Max said. "But you got to do it my way; I mean, if you're waiting for that skunk Hada to change you're wasting your time. About all you can do—" He paused. "Is even up the score."

The violence which had left her face crept back as she understood, gradually, what he meant.

FROWNING, Dr. Ito Yasumi said, "I have now made my examination, Hada." He began putting away his battery of cards. "This Rags Park is neither telepath nor pre-cog; he neither reads my mind nor cognates what is to be, and frankly, Hada, although I still sense psi-power about him I have no idea what it might be."

Hada listened in silence. Now Rags Park, this time with a guitar over his shoulder, wandered

in from the other room. It seemed to amuse him that Dr. Yasumi could make nothing of him; he grinned at both of them and then seated himself. "I'm a puzzle," he said to Hada. "Either you got too much when you hired me or not enough . . . but you don't know which and neither does Dr. Yasumi or me."

"I want you to start at once over CULTURE," Hada told him impatiently. "Make up and sing folk ballads that depict the unfair imprisonment and harassment of Jim-Jam Briskin by Leon Lait and his FBI. Make Lait appear a monster; make Fischer appear a scheming, greedy boob. Understand?"

"Sure," Rags Park said, nodding. "We got to get public opinion aroused. I knew that when I signed; I ain't just entertaining, no more."

Dr. Yasumi said to Rags, "Listen, I have favor to ask. Make up folk-style ballad telling how Jim-Jam Briskin *get out of jail*."

Both Hada and Rags Park glanced at him.

"Not about what is," Yasumi explained, "but about that which we want to be."

Shrugging, Park said, "Okay."

The door to Hada's office burst open and the chief of his bodyguard, Dieter Saxton, put his head excitedly in. "Mr. Hada, we just gunned down a woman who

was trying to get through to you with a home-made bomb. Do you have a moment to identify her? We think maybe it's—I mean it was—one of your wives."

"God in heaven," Hada said, and hurried along with Saxton from the office and down the corridor.

There on the floor, near the front entrance of the demesne, lay a woman he knew. Zoe, he thought. He knelt down, touched her.

"Sorry," Saxton mumbled. "We had to, Mr. Hada."

"All right," he said. "I believe you if you say so." He greatly trusted Saxton; after all he had to.

Saxton said, "I think from now on you better have one of us close by you at all times. I don't mean outside your office; I mean within physical touch."

"I wonder if Max Fischer sent her here," Hada said.

"The chances are good," Saxton said. "I'd make book on it."

"Just because I'm trying to get Jim-Jam Briskin released." Hada was thoroughly shaken. "It really amazes me." He rose to his feet unsteadily.

"Let me go after Fischer," Saxton urged in a low voice. "For your protection. He has no right to be President; Unicephalon 40-D is our only legal President and we all know Fischer put it out of commission."

"No," Hada murmured. "I don't like murder."

"It's not murder," Saxton said. "It's protection for you and your wives and children."

"Maybe so," Hada said, "but I still can't do it. At least not yet." He left Saxton and made his way with difficulty back to his office, where Rags Park and Dr. Yasumi waited.

WE heard," Yasumi said to him. "Bear up, Hada. The woman was a paranoid schizophrenic with delusions of persecution; without psychotherapy it was inevitable that she would meet a violent death. Do not blame yourself or Mr. Saxton."

Hada said, "And at one time I loved that woman."

Dolefully strumming on his guitar, Rags Park sang to himself; the words were not audible. Perhaps he was practicing on his ballad of Jim Briskin's escape from jail.

"Take Mr. Saxton's advice," Dr. Yasumi said. "Protect yourself at all times." He patted Hada on the shoulder.

Rags spoke up, "Mr. Hada, I think I've got my ballad, now. About—"

"I don't want to hear it," Hada said harshly. "Not now." He wished the two of them would leave; he wanted to be by himself.

Maybe I should fight back, he

thought. Dr. Yasumi recommends it; now Dieter Saxton recommends it. What would Jim-Jam recommend? He has a sound mind . . . he would say, Don't employ murder. I know that would be his answer; I know him.

And if he says not to, I won't.

Dr. Yasumi was instructing Rags Park, ". . . a ballad, please, about that vase of gladioli over there on the bookcase. Tell how it rise up straight in the air and hover; all right?"

"What kind of ballad is that?"

Rags said. "Anyhow, I got my work cut out for me; you heard what Mr. Hada said."

"But I'm still testing you," Dr. Yasumi grumbled.

* * *

To his cousin the Attorney General, Max Fischer said disgustedly, "Well, we didn't get him."

"No, Max," Leon Lait agreed. "He's got good men in his employ; he's not an individual like Briskin, he's a whole corporation."

Moodily, Max said, "I read a book once that said if three people are competing, eventually two of them will join together and gang up on the third one. It's inevitable. That's exactly what's happened; Hada and Briskin are buddies, and I'm alone. We have to split them apart, Leon, and get one of them on our side against the other. Once Briskin

liked me. Only he disapproved of my methods."

Leon said, "Wait'll he hears about Zoe Hada trying to kill her ex-husband; then Briskin'll really disapprove of you."

"You think it's impossible to win him over, now?"

"I sure do, Max. You're in a worse position than ever, regarding him. Forget about winning him over."

"There's some idea in my mind, though," Max said. "I can't quite make out what it is, yet, but it has to do with freeing Jim-Jam in the hopes that he'll feel gratitude."

"You're out of your mind," Leon said. "How come you ever thought of an idea like that? It isn't like you."

"I don't know," Max groaned. "But there it is."

* * *

To Sebastian Hada, Rags Park said, "Uh, I think maybe I got me a ballad now, Mr. Hada. Like Doctor Yasumi suggested; It has to do with telling how Jim-Jam Briskin gets out of jail. You want to hear it?"

Dully, Hada nodded. "Go ahead." After all, he was paying the folk singer; he might as well get something for his money.

Twanging away, Rags sang:

"Jim-Jam Briskin languished
in jail,

Couldn't find no one to put
up his bail.

Blame Max Fischer! Blame
Max Fischer!"

Rags explained, "That's the
chorus, 'Blame Max Fischer!'
Okay?"

"All right," Hada said, nod-
ding.

With fire in his eyes, Rags
launched into the body of the
song:

"The Lord came along, said,
Max, I'm mad.

Casting that man in jail,
that was bad.

Blame Max Fischer! the
good Lord cried.

Poor Jim Briskin, his rights
denied.

Blame Max Fischer! I'm
here to tell;

Good Lord say, Him go
straight to hell.

Repent, Max Fischer! There's
only one route:

Get on my good side; let
Jim-Jam out."

Rags explained to Hada,
"Now here's what's going to
happen." He cleared his throat:

"Bad Max Fisher, he saw the
light,

Told Leon Lait, We got to do
right.

Sent a message down to turn
that key,

Open that door and let Jim-
Jam free.

Old Jim Briskin saw an end
to his plight;

Jail door open, now, lets in
the light."

"That's all," Rags informed
Hada. "It's a sort of holler type
of folk song, a spiritual where
you tap your foot. Do you like
it?"

Hada managed to nod. "Oh
sure. Anything's fine."

"Shall I tell Mr. Kaminsky you
want me to air it over CUL-
TURE?"

"Air away," Hada said. He
did not care; the death of Zoe
still weighed on his mind—he
felt responsible, because after all
it had been his bodyguards who
had done it, and the fact that
Zoe had been insane, had been
trying to destroy him, did not
seem to matter. It was still a
human life; it was still murder.
"Listen," he said to Rags on im-
pulse, "I want you to make up
another song, now."

With sympathy, Rags said, "I
know, Mr. Hada. A ballad about
the sad death of your former
wife Zoe. I been thinking about
that and I have a ballad all
ready. Listen:

"There once was a lady fair
to see and hear;

Wander, spirit, over field
and star,

Sorrowful, but forgiving
from afar.

That spirit knows who did
her in.

It was a stranger, not her
kin.

It was Max Fischer who
knew her not—"

Hada interrupted, "Don't whitewash me, Rags; I'm to blame. Don't put everything on Max as if he's a whipping boy."

SEATED in the corner of the office, listening quietly, Dr. Yasumi now spoke up. "And also too much credit to President Fischer in your ballads, Rags. In ballad of Jim-Jam's release from jail you specifically give credit to Max Fischer for ethical change of heart. This will not do. The credit for Jim-Jam's release must go to Hada. Listen, Rags; I have composed a poem for this occasion."

Dr. Yasumi chanted:

"News clown nestles not in
jail. A friend,
Sebastian Hada, got him
free.

He loves that friend, re-
gards him well.

Knows whom to honor, and
to seek.

"Exactly thirty-two syllables," Dr. Yasumi explained modestly. "Old-style Japanese type haiku poetry does not have to rhyme as do U.S.-English ballads, however must get right to the point, which in this matter is all important." To Rags he said, "You make my haiku into ballad, okay? In your typical fashion, in rhythmic, rhyming couplets, et cetera, and so on."

"I counted thirty-three syllables," Rags said. "Anyhow, I'm a

creative artist; I'm not used to being told what to compose." He turned to Hada. "Who'm I working for, you or him? Not him, as far as I know."

"Do as he says," Hada told Rags. "He's a brilliant man."

Sullenly, Rags murmured, "Okay, but I didn't expect this sort of job when I signed the contract." He retired to a far corner of the office to brood, think and compose.

"What are you involved with, here, Doctor?" Hada asked.

"We'll see," Dr. Yasumi said mysteriously. "Theory about psi-power of this balladeer, here. May pay off, may not."

"You seem to feel that the exact wording of Rags' ballads is very important," Hada said.

"That right," Dr. Yasumi agreed. "As in legal document. You wait, Hada; you find out—if I right—eventually. If I wrong, doesn't matter anyhow." He smiled encouragingly at Hada.

THE phone in President Max Fischer's office rang. It was the Attorney General, his cousin, calling in agitation. "Max, I went over to the Federal pen where Jim-Jam is, to see about quashing the charges against him like you were talking about—" Leon hesitated. "He's gone, Max. He's not in there any more." Leon sounded wildly nervous.

"How'd he get out?" Max said, more baffled than angry.

"Art Heaviside, Hada's attorney, found a way; I don't know yet what it is—I have to see Circuit Court Judge Dale Winthrop, about it; he signed the release order an hour or so ago. I have an appointment with Winthrop . . . as soon as I've seen him I'll call you back."

"I'll be darned," Max said slowly. "Well, we were too late." He hung up the phone reflexively and then stood deep in thought. *What has Hada got going for him?* he asked himself. Something I don't understand.

And now the thing to watch for, he realized, is Jim Briskin showing up on TV. On CULTURE's network.

Going over to the television set, Max turned it on.

With relief he saw on the screen—not Jim Briskin—but a folk singer plucking away on a banjo.

And then he realized that the folk singer was singing about *him*.

"Bad Max Fischer, he saw the light,

Told Leon Lait, We got to do right.

Sent a message down to turn that key".

Listening, Max Fischer said aloud, "My God, that's exactly what happened! That's exactly what I did!" Eerie, he thought.

What's it mean, this ballad singer on CULTURE who sings about what I'm doing—secret matters that he couldn't possibly know about!

Telepathic, maybe, Max thought. That must be it.

Now the folk singer was narrating and plucking about Sebastian Hada, how Hada had been personally responsible for getting Jim-Jam Briskin out of jail. And it's true, Max said to himself. When Loen Lait got there to the Federal pen he found Briskin gone because of Art Heaviside's activity . . . I better listen pretty carefully to this singer, because for some reason he seems to know more than I do.

But the singer now had finished.

The CULTURE announcer was saying, "That was a brief interlude of political ballads by the world-renowned Ragland Park. Mr. Park, you'll be pleased to hear, will appear on this channel every hour for five minutes of new ballads, composed here in CULTURE's studios for the occasion. Mr. Park will be watching the teletypers and will compose his ballads to—"

Max switched the set off, then.

Like calypso, Max realized. News-ballads. God, he thought dismally. Suppose Park sings one about Unicephalon 40-D coming back.

I have a feeling, he thought,

that what Ragland Park sings turns out to be true. It's one of those psionic talents.

And they, the opposition, are making use of this.

On the other hand, he thought, I might have a few psionic talents of my own. Because if I didn't, *I wouldn't have gotten as far as I have.*

Seated before the TV set he switched it on once again and waited, chewing his lower lip and pondering what he should do. As yet he could come up with nothing. But I will, sooner or later, he said to himself. And before they come up with the idea of bringing Unicephalon 40-D back . . .

DR. Yasumi said, "I have solved what Ragland Park's psi-talent is, Hada. You care to know?"

"I'm more interested in the fact that Jim-Jam is out of jail," Hada answered. He put down the receiver of the telephone, almost unable to believe the news. "He'll be here right away," he said to Dr. Yasumi. "He's on his way direct, by monorail. We'll see that he gets to Callisto, where Max has no jurisdiction, so they can't possibly re-arrest him." His mind swirled with plans. Rubbing his hands together he said rapidly, "Jim-Jam can broadcast from our transmitter on Callisto. And he can

live at my demesne there—that'll be beer and skittles for him—I know he'll agree."

"He is out," Dr. Yasumi said drily, "because of Rags' psi-talent, so you had better listen. Because this psi-talent is not understood even by Rags, and honestly to God, it could rebound on you any time."

Reluctantly, Hada said, "Okay, give me your opinion."

"Relationship between Rags' made-up ballads and reality is one of cause and effect. What Rags describes then takes place. The ballad precedes the event and not by much. You see? This could be dangerous, if Rags understood it and made use of it for own advantage."

"If this is true," Hada said, "then we want him to compose a ballad about Unicephalon 40-D returning to action." That was obvious to him instantly. Max Fischer would be merely the stand-by President once more, as he had originally been. Without authority of any kind.

"Correct," Dr. Yasumi said. "But problem is, now that he is making up these political-type ballads, Ragland Park is apt to discover this fact, too. For if he makes up song about Unicephalon and then it actually—"

"You're right," Hada said. "Even Park couldn't miss that." He was silent, then, deep in thought. Ragland Park was po-

tentially even more dangerous than Max Fischer. On the other hand, Ragland seemed like a good egg; there was no reason to assume that he would misuse his power, as Max Fischer had his.

But it was a great deal of power for one human being to have. Much too much.

Dr. Yasumi said, "Care must be taken as to exactly what sort of ballads Ragland makes up. Contents must be edited in advance, maybe by you."

"I want as little as possible—" Hada began, and then ceased. The receptionist had buzzed him; he switched on the intercom.

"Mr. James Briskin is here."

"Send him right in," Hada said, delighted. "He's here, already, Ito." Hada opened the door to the office—and there stood Jim-Jam, his face lined and sober.

"Mr. Hada got you out," Dr. Yasumi informed Jim-Jam.

"I know. I appreciate it, Hada." Briskin entered the office and Hada at once closed and locked the door.

"Listen, Jim-Jam," Hada said, without preamble, "we've got greater problems than ever. Max Fischer as a threat is nothing. Now we have to deal with an ultimate form of power, an absolute rather than a relative form. I wish I had never gotten into this; whose idea was it to hire Rags Park?"

Dr. Yasumi said, "Yours, Hada, and I warned you at the time."

"I'd better instruct Rags not to make up any more new ballads," Hada decided. "That's the first step to take. I'll call the studio. My God, he might make up one about us all going to the bottom of the Atlantic, or twenty a.u.s. out into deep space."

"Avoid panic," Dr. Yasumi told him firmly. "There you go ahead with panic, Hada. Volatile as ever. Be calm and think first."

"How can I be calm," Hada said, "when that rustic has the power to move us around like toys? Why, he can command the entire universe."

"Not necessarily," Dr. Yasumi disagreed. "There may be limit. Psi-power not well understood even yet. Hard to test out in laboratory condition; hard to subject to rigorous, repeatable scrutiny." He pondered.

Jim Briskin said, "As I understand what you're saying—"

"You were sprung by a made-up ballad," Hada told him. "Done at my command. It worked, but now we're stuck with the ballad singer." He paced back and forth, hands in his pockets.

What'll we do with Ragland Park? he asked himself desperately.

AT the main studios of CULTURE in the Earth satellite

Culone, Ragland Park sat with his banjo and guitar, examining the news dispatches coming in over the teletype and preparing ballads for his next appearance.

Jim-Jam Briskin, he saw, had been released from jail by order of a Federal judge. Pleased, Ragland considered a ballad on that topic, then remembered that he had already composed—and sung—several. What he needed was a new topic entirely. He had done that one to death.

From the control booth, Nat Kaminsky's voice boomed over the loudspeaker, "You about ready to go on again, Mr. Park?"

"Oh sure," Ragland replied, nodding. Actually he was not, but he would be in a moment or two.

What about a ballad, he thought, concerning a man named Pete Robinson of Chicago, Illinois, whose springer spaniel was attacked one fine day in broad daylight on a city street by an enraged eagle?

No, that's not political enough, he decided.

What about one dealing with the end of the world? A comet hitting Earth, or maybe the aliens swarming in and taking over . . . a real scary ballad with people getting blown up and cut in half by ray guns?

But that was too unintellectual for CULTURE; that wouldn't do either.

Well, he thought, then a song about the FBI. I've never done one on that subject; Leon Lait's men in gray business suits with fat red necks . . . college graduates carrying briefcases . . .

To himself he sang, while strumming his guitar:

"Our department chief says,
Hark;

Go and bring back Ragland
Park.

He's a menace to conform-
ity;

His crimes are an enormity."

Chuckling, Ragland pondered how to go on with the ballad. A ballad about himself; interesting idea . . . how had he happened to think of that?

He was so busy concocting the ballad, in fact, that he did not notice the three men in gray business suits with fat red necks who had entered the studio and were coming toward him, each man carrying a briefcase in a way that made it clear he was a college graduate and used to carrying it.

I really have a good ballad going, Ragland said to himself. The best one of my career. Strumming, he went on:

"Yes, they sneaked up in the
dark

Aimed their guns and shot
poor Park.

Stilled freedom's clarion cry
When they doomed this man
to die;

But a crime not soon forgotten

Even in a culture rotten."

That was as far as Ragland got in his ballad. The leader of the group of FBI men lowered his smoking pistol, nodded to his companions and then spoke into his wrist transmitter. "Inform Mr. Lait that we have been successful."

The tinny voice from his wrist answered, "Good. Return to headquarters at once. *He* orders it."

He, of course, was Maximilian Fischer. The FBI men knew that, knew who had sent them on their mission.

IN his office at the White House, Maximilian Fischer breathed a sigh of relief when informed that Ragland Park was dead. A close call, he said to himself. That man might have finished me off—me and everybody else in the world.

Amazing, he thought, that we were able to get him. The breaks certainly went our way. I wonder why.

Could be one of my psionic talents has to do with putting an end to folk singers, he said to himself, and grinned with sleek self-satisfaction.

Specifically, he thought, a psitalent for getting folk singers to compose ballads on the theme of their own destruction . . .

And now, he realized, the real problem. Of getting Jim Briskin back into jail. And it will be hard; Hada is probably smart enough to think of transporting him immediately to an outlying moon where I have no authority. It will be a long struggle, me against those two . . . and they could well beat me in the end.

He sighed. A lot of hard work, he said to himself. But I guess I got to do it. Picking up the phone, he dialled Leon Lait . . .

THE END

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You need more than a smile for your umbrella when you go Out There, for there's a good deal of danger to

The Weather in Space

By BEN BOVA

Illustrated by FINLAY

ALTHOUGH newspaper items, science fiction stories, and even technical articles still speak of the "vacuum" of space, it does not exist. Of course, the space between the planets *is* rather empty. Typically, there may be only 10 atoms per cubic centimeter (a volume roughly comparable to the tip of your little finger to halfway down the nail). At such a low density, it would take a volume the size of the Earth to make up eight pounds of matter. To put it another way, the density of the interplanetary material is roughly one million times lower than the best *vacuum* obtainable on Earth.

Yet this emptiness is not a complete void. It contains some material. It contains tremendous energies: electromagnetic radiations, magnetic fields, and enormously energetic particles

born in the Sun and other stars. And there is even weather in space—weather that is potentially man-killing.

Before the first artificial satellites went up, not much was known about the physical conditions a scant few hundred miles over our heads. But since 1957 scientists have found the Van Allen belts of radiation that surround our planet; they discovered the "wind" of charged atomic particles that flows from the Sun; they learned that shock waves pass through interplanetary space; and they are beginning to understand how a solar flare causes magnetic storms on Earth. Already it has become clear that lethal doses of high-energy atomic particles can pose a deadly danger to men in space. And even unmanned satellites or space probes have been rendered

inoperative when high radiation intensities ruined electronic equipment.

Plasma Physics and MHD

THE interplanetary void is neither solid, liquid, nor gaseous. It consists of what physicists call the "fourth state of matter"—plasma. The physicists' plasma is a special type of gas—an *ionized* gas—in which some or all of the atoms have had at least one electron pulled away from them. Thus an ionized gas, or plasma, consists of positively-charged ions and the free electrons. There may or may not also be non-ionized, electrically-neutral atoms in a plasma. If there are, the plasma is said to be only partially ionized. Interplanetary plasma is fully ionized: no neutral atoms. However, regardless of the degree of ionization, a plasma is always electrically neutral. Positive and negative charges, though separated, are present in equal numbers.

Note, too, that the definition of a plasma is independent of chemical composition. *Any* gas can be ionized and become a plasma. If ordinary air is heated to about 5000°F, some of its atoms begin to shed electrons and a partially-ionized plasma is obtained. The interplanetary plasma consists almost entirely of hydrogen. Since the hydrogen atom consists of a one-proton

nucleus orbited by a single electron, a completely-ionized hydrogen plasma, then, consists of individual protons and electrons.

What makes a plasma so special that physicists call it the "fourth state of matter?"

The difference is this: Even though it is electrically neutral, a plasma can conduct electricity. A plasma can also support magnetic fields. A plasma can be physically moved, accelerated, transported, by electromagnetic forces. In short, the interplanetary plasma is a realm where palpable electromagnetic energies play a more important role than the rare protons and electrons. Thus, the study of plasmas has led to a relatively new branch of physics called magnetohydrodynamics. MHD, for short. MHD is the study of the interactions of electromagnetic forces and plasmas.

Plasmas are by no means unusual throughout the universe. Most of the universe is plasma! The stars are entirely plasma, and the tenuous stuff between the stars (even *less* dense than interplanetary matter) is at least partially plasma, and partially non-ionized gas. We have seen that interplanetary space—at least as far as man has been able to probe it—consists of plasma. There is even one place close at hand where you can find a plasma: Fluorescent lamps



contain gases that become ionized when a current is put through them. And rocket exhaust gases are partially-ionized plasmas.

The Sun as a Weathermaker

METEOROLOGISTS will tell you that the Sun is responsible, directly or indirectly, for all our Earthly weather. Astrophysicists now believe that the Sun is also the source of the weather in the Solar System's interplanetary space.

The sun is entirely plasma. At its core, temperatures must be 15,000,000°F or more: hot enough to cause the hydrogen fusion reactions that keep the Sun aglow. The temperature at the surface of the Sun averages about 10,000°F. Actually, the Sun has no sharply-defined surface in the same sense that a planet such as our own has. This region of the solar surface is called the *photosphere*; not a clear-cut layer, but the general area in which solar plasma gradually becomes opaque.

Astronomers calculate that they can see about a hundred miles down into the slightly-transparent photosphere; below that, the solar disk is truly the "shining globe" that the word photosphere refers to. The plasma in the photosphere is practically a vacuum, by terrestrial standards. The photosphere has only

about 1/100th the density of a sea-level air. The photosphere is also the region where sunspots occur.

Atop the photosphere is the *chromosphere*, or "sphere of color," so called because when it is seen during solar eclipses it gives off a rosy, pinkish hue. The chromosphere is too faint to be seen except during eclipses, or with the coronagraph—an instrument which produces made-to-order eclipses inside a telescope.

The chromosphere has a density comparable to the thinnest vacuum obtainable in our laboratories. While the depth of the chromosphere—some 5000 miles—is greater than the radius of the Earth, it is still only a shallow layer of gases when compared to the Sun's total diameter of about 850,000 miles.

Chromosphere Extremes

Although it is a shallow layer by solar standards, the chromosphere is the site of an amazingly steep temperature gradient. At its bottom, where it merges with the photosphere, the chromosphere is at about 10,000°F. But at its outermost edge, where the chromosphere blends into the Sun's corona, the temperature soars to more than 1,000,000°F.

What causes this sharp temperature rise? And why is the

plasma getting hotter as one looks further from the solar surface? There are no definite answers yet. It is known that the photosphere and chromosphere are the scene of intense solar magnetic activity. Perhaps the plasma particles in the diffuse chromosphere and corona are acquiring energy through MHD forces.

One thing is clear. In plasmas that are so rarified, "temperature" is *not* related to "heat" in the same way as we relate them on Earth. Temperature is actually a measurement of the speed at which atomic particles are moving. A fast-moving particle will impart more energy (heat) when it strikes another particle than a slow-moving one. Where there are dense clusterings of atoms, as on Earth, high temperatures are associated with many particle collisions and much energy-transfer—heat. But in the vacuum-like conditions of the chromosphere and corona, the particles are spread so thinly that there is comparatively little chance for one particle to transfer energy to another by collision. So the high temperatures of such plasmas actually have very little heat content associated with them.

The outermost portion of the Sun is the corona—a thin, wispy, distended region. While very faint visually, the corona is the

chief source of the Sun's sustained radio-wave emission. As one looks farther and farther out from the Sun, the corona becomes so diffuse that it becomes impossible to distinguish it from the interplanetary plasma. Most astronomers have accepted the convention that the outer corona and the interplanetary medium are one and the same. According to that line of reasoning, we could say Earth orbits *within* the outer reaches of the Sun!

Wind, Storm, Rain and Sunshine

NOW let's examine the weather in space, itself. But first we must become acquainted with a fundamental item of vocabulary. We saw that it is misleading to speak of "temperatures" in low-density interplanetary plasma. The energy content of particles in such plasmas is usually expressed in terms of *electron volts*. One electron volt corresponds to a temperature of about 20,000°F. The electron volt (or ev) should be thought of as a measure of the total energy possessed by an average particle in a plasma. For example, particles in solar corona have energies in the range of 100 electron volts.

Now then, what is the weather in space?

To begin with, there is the "solar wind": a constant stream of protons and electrons that flows outward from the Sun at

nearly 200 miles per second. The solar wind blows well past the orbit of Earth and probably past that of Mars. Most astronomers now believe that the wind slows down to a "solar breeze" by the time it gets the distance of Jupiter's orbit.

What causes the solar wind? It has been conjectured that MHD forces might be responsible. The interplanetary plasma is pervaded by a weak magnetic field. The charged electrons and protons tend to spiral around lines of magnetic force. Instead of travelling in straight lines, they follow corkscrew paths through space. The magnetic field lines can vibrate when disturbed, just as the strings of a harp vibrate when the harpist runs a finger along them. Thus a vibration of a field line would tend to drag along all the particles spiralling around that line. Such a motion of the charged particles, in turn, would in effect be an electrical current that would deflect the next field line and cause it, too, to vibrate. And so on—for astronomical distances.

There are times when the solar wind violently surges to "hurricane velocity," about 1000 miles per second. These abrupt spurts are associated with magnetic storms on Earth, clouds of radiation particles in space, and the most powerful natural phenome-

non man has ever closely witnessed: solar flares. We will deal with solar flares, and the interplanetary storms that they cause, in some detail a bit later. For now, suffice it to say that the storms in space caused by solar flares represent as great a hazard to spacemen as hurricanes did to seafarers a hundred years ago. Perhaps more so.

In addition to solar winds and storms, space weather includes cosmic rays, which are not rays, but particles. (They were named before their nature was understood.) They are actually electron-less atomic nuclei. About 85% of them are simply protons: hydrogen nuclei. Some 14% are helium nuclei, and the remaining one percent consist of heavier elements, up to iron. Cosmic rays are probably the most energetic particles discovered to date, with energies ranging all the way up to a spectacular 10^{19} electron volts. The bulk of them are in the more reasonable (but still awesome) range of billions (10^9) of electron volts—Bev, for short.

Cosmic rays are comparatively rare in interplanetary space. Normally there is less than one such particle per cubic yard at any instant of time. While some writers have occasionally worried in print about the "rain" of cosmic radiation and its dangers for manned spaceflight, the ac-

tual cosmic ray flux is more like a "drizzle," and probably poses no massive hazard to men in space. Solar flares can produce particles with energies ranging up to about 100 Bev. These are considered to be cosmic rays of solar origin, although the steady flux of cosmic rays apparently comes from far beyond the Solar System.

The Sun beams a full spectrum of electromagnetic energy into space: radio waves, microwaves, infrared, visible light, ultraviolet, x-rays, and gamma rays. Earth's atmosphere screens out all but a small slice of the radio waves and the shorter-wavelength region that includes what we call "visible light."

Contrary to what you might expect, a Solar flare is usually an inconspicuous event when viewed in visible light. However, flares do generally produce a burst of radio noise together with considerable x-ray and ultraviolet "light."

X-rays and gamma rays might be dangerous to an unshielded man, but a few inches of ordinary air, or the metal hull of a spacecraft, are enough to stop them. Solar ultraviolet could sunburn a man to a crisp in a few minutes, but again routine precautions should eliminate this potential threat.

Thus the weather in space includes wind, storms, a cosmic

drizzle, and full-spectrum sunshine. We could say, too, that the interplanetary plasma and magnetic field represent the long-range "climate" of space that is really unaltered by the day-to-day weather. Incidentally, the interplanetary magnetic field's strength, only 2×10^{-8} (or 0.00002) gauss, sounds picayune when compared to the many thousand-gauss fields on the Sun's surface, or to the fields of 100,000 gauss or more than man can produce. Yet this field pervades immense distances. And, partially because there is so little matter in space, the magnetic field plays an important role in the interplanetary weather.

Under the Earth's Umbrella

SO far we have been discussing the conditions between the Earth and Sun. Conditions in the immediate neighborhood of Earth are considerably different, mainly because the Earth has a magnetic field of its own.

The geomagnetic field like the interplanetary field, is only a fraction of a gauss. But it reaches tens of thousands of miles into space. The first big surprise of the Space Age was the discovery that the geomagnetic field trapped energetic particles and held them in a pair of rings, or belts, surrounding our planet. These are the Van Allen

radiation belts. The inner radiation belt is centered about 2000 miles above the Earth's surface, and is confined within roughly 30 degrees of the equator. The inner belt consists predominantly of protons with energies between 20 to 40 million electron volts; energies as high as 700 Mev have occasionally been detected. The outer belt contains mostly electrons in the 40 to 50 thousand volt (Kev) range. This belt is about 10,000 miles up, and stretches from about 75 degrees north latitude to 75 degrees south.

The densities of the radiation belts averages approximately 10^7 particles per cubic centimeter—considerably higher than the density of the interplanetary plasma. Yet all the particles in the belts put together would weigh something like 150 pounds on Earth! Actually, the densities of the belts varies considerably. The inner belt might vary by a factor of three or four in the course of a year. The outer belt can vary by a factor of 10 in less than a day, depending on the weather in space.

While the earliest satellites discovered the Van Allen belts, later space vehicles showed that the region between the belts and beyond them is also pervaded with lower-density, lower-energy particles. The entire domain above our atmosphere is now

called the *magnetosphere*. The highest-energy particles in the magnetosphere—those in the Van Allen belts—could be dangerous to men if they remained in the belts for a length of time. Astronauts will have to travel through the belts quickly, or carry radiation shielding. On the other hand, the magnetosphere acts as an umbrella shielding our planet from the direct effects of the solar wind and the violent disturbances that accompany solar flares. A permanent manned satellite station orbiting low enough to be under the inner belt could use the magnetosphere as a substitute for radiation shielding.

Much like the turbulent "front" between two air masses on Earth, there is a sharply-defined zone in space where the solar wind collides with the geomagnetosphere. The situation is somewhat like that of a sphere in a hypersonic wind tunnel: a shock wave forms upstream of the sphere, and a wake forms downstream. But the solar wind reacts not with the solid sphere of the Earth, but with the magnetosphere. And the shock wave that forms is not an aerodynamic shock, but an MHD shock—the result of a complicated and partially-unknown interaction of the interplanetary plasma, solar wind, interplanetary magnetic field, and geomagnetosphere.

Under normal conditions, this standing MHD shock wave is located some 40,000 miles from the Earth. When the solar wind is stronger, the shock wave is pushed Earthward. It has been observed as close as 25,000 miles from the Earth during a solar flare period. The shock wave stands, of course, on the sunlit side of the magnetosphere. Conditions on the dark side are not yet very well known. Satellites and interplanetary probes have not yet found how far back the Earth's MHD wake trails "downstream". It may extend as far as 100,000 miles before merging again into the general interplanetary *milieu*.

Hurricane Weather: Solar Flares

THE exact cause of a solar flare is unknown, although it is apparent that flares are closely associated with sunspots. Galileo and his students were the first to see sunspots more than 400 years ago. For nearly four centuries, no one was able to discover anything more about sunspots than that they are slightly cooler regions of the photosphere, and that they go through cycles of activity that average about 11 years from maximum to maximum. (We are now in a minimal period; 1964 has been designated the International Year of the Quiet Sun, and world-wide studies of the Sun

and its effects on Earth will be undertaken during this time of low sunspot activity.) There is still no completely satisfactory explanation of sunspots. But today we know sunspots are the site of strong local magnetic fields that probably impede the flow of heat from the solar interior to the photosphere.

Picture a long column of hot plasma welling up from the Sun's core. For some reason, a magnetic "stopper" sometimes forms atop such a column and bottles it up. The top of the column becomes cooler and darker than the surrounding photosphere; we have a sunspot. But something eventually has to give. What gives, apparently, is the "stopper." The magnetic field seems to collapse and dump its energy into the plasma. The plasma literally explodes into space. This is a solar flare. Flares come in many sizes. Even the smallest are more powerful than anything yet produced on Earth by man or nature. Some of the larger ones can release as much energy in a half-hour as the explosion of a billion multi-megaton bombs.

Flares produce a complicated chain of events between the Sun and Earth. And the effects of flares on space voyagers is literally a matter of life and death. We have seen that flares emit electromagnetic energy. This ra-

diation reaches the Earth in 8.3 seconds, and is the harbinger of more serious things to come. Following the electromagnetic energy by a few minutes or a few hours is the first wave of extremely energetic particles—almost exclusively protons. Apparently these particles originated in the chromosphere or inner corona and are hurled outward by the MHD forces at work in the flare. The protons travel through the interplanetary plasma as though it did not exist, and they move at speeds that sometimes approach the speed of light. The actual transit time of the protons between the Sun and Earth depends both on the intensity of the flare, and the alignment of the interplanetary magnetic field.

Since the charged particles are constrained to move along lines of magnetic force, the interplanetary field can either help or hinder their passage through space. The field lines can be thought of as huge loops that begin and end on the Sun's surface, but which can writhe and twist in great sinuous coils over interplanetary distances. If the loops happen to be arranged so that they "connect" more or less neatly with the Earth, then the flare protons have an open highway leading toward us. But if the loops happen to be twisted away from the Earth during the

flare, the protons may be delayed several hours in reaching here. These protons—often packing Bev energies—are the deadliest danger now known to exist in space. Those resulting from the larger flares could kill an unshielded man exposed to them for only a matter of minutes. This "hurricane wind" of energetic protons blows for 24 hours or more after a strong flare. During this time, however, other things are happening between the Earth and Sun.

We saw that the flare emitted a great puff of plasma into space. This plasma cloud carries with it its *own* magnetic field. The cloud-and-field combination acts somewhat like a piston on the interplanetary plasma-and-field, and apparently sets up an MHD shock wave—a shock wave that is transmitted through space by magnetic lines of force "colliding" with one another, rather than by the particles of the plasma. This shock wave reaches the Earth within 12 to 24 hours (travelling at roughly four to eight million miles per hour). The immediate effect is a sudden squashing of the Earth's magnetic field. The plasma cloud and its associated magnetic field, following behind the shock wave, then blow into the magnetosphere, and the Earth experiences a magnetic storm.

The Aurorae gleam wildly,

long-range radio communication goes haywire, the whole geomagnetic field buckles and vibrates, and even transoceanic and transcontinental cable communications are often disrupted by induced magnetic disturbances. But communications with interplanetary probes have been maintained in spite of solar flares and magnetic storms. However, the plasma cloud itself consists of still additional energetic particles that will bathe a spacecraft with lethal radiation for 24 hours or more.

Storm Cellar or Almanac?

THE energetic particles, then, form a deadly threat to men in space. There are two ways of combatting them: shield against them, or avoid flying through them. The only way to avoid them is to stay on the ground (or, at least, beneath the lower Van Allen belt) during times of flare activity. The problem then becomes one of predicting solar flares. This is a chancy way to risk your life. However, it may be possible to predict flares with enough accuracy to allow men safely to get to the Moon on three-day trips.

During a period of maximum solar activity, flares strong enough to be dangerous can be expected, on the average, once a week. Not all of these flares will be aimed in a direction that

would affect the Earth-Moon system. But it is easy to see that there may well be long stretches of time when it would be impossible to venture beyond the lower Van Allen belt without shielding.

When you consider interplanetary voyages, which will take months or years, the flare hazard becomes even worse. Even in the quietest periods of the solar cycle, there are strong flares about every three months. Thus, for manned flights to Venus, Mars, or farther, shielding will be a necessity.

Some hope of providing better shielding protection at less weight has recently come from the development of superconducting magnetic coils. These are electromagnets constructed of exotic materials (niobium, zirconium) that require no electrical power once they are energized, so long as they remain at liquid helium temperatures. The idea is to shield a spacecraft by a powerful magnetic field, in the same manner that the Earth itself is shielded by its geomagnetosphere. The problems of engineering such superconducting coils are formidable. But the chances are that when men make their first voyage to Mars, they will be riding within their own magnetically-shielded "storm cellar."

THE END

The creature towered over Tinnerman—in more ways than one. Be introduced here to one of the strangest monsters ever to appear in sf. Meet the . . .

QUINQUEPEDALIAN

By PIERS ANTHONY

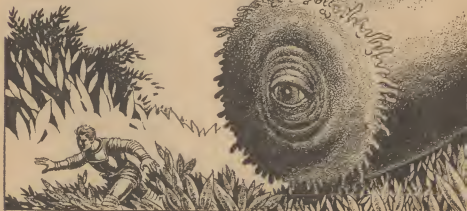
IT lay there, an indentation in the soil, two inches deep and nine feet in diameter. It was flat, it was smooth, and the sand and the dirt were twined with rotted leaves and stems in a marbled pattern. The edge, cut sharp and clean, exposed a miniature stratum leading up to the unpressed forest floor, and spoke of the weight that had stood on

that spot, molding the earth into the shape of its fundament.

It was the mark of a foot, or a hoof, or whatever it is that touched the ground when an animal ambulates. One print—

Charles Tinnerman shook his head somberly. A single print could have been a freak of nature. This was one of many: a definite trail. They were spaced

Illustrated by FINLAY





twenty or thirty feet apart, huge and level; ridges of spadiceous earth narrowed toward the center of each, rounded and smooth, as though squirted liquidly up between half-yard toes. Some were broken, toppled worms lying skew, skuffed when the hoof moved on.

Around the spoor rose the forest, in Gargantuan splendor; each trunk ascending gauntly into a mass of foliage so high and solid that the ground was cast into an almost nocturnal shadow.

At dusk the three men halted. "We could set up an arc," Tinnerman said, reaching behind to pat his harness.

Don Abel grunted negatively. "Use a light, and everything on the planet will know where we are. We don't want the thing that made that," he gestured toward the trail, "to start hunting us."

The third man spoke impatiently. "It rains at night, remember? If we don't get close pretty soon, the water'll wash out the prints."

Tinnerman looked up. "Too late," he said. There was no thunder, but abruptly it was raining, solidly, as it must to support a forest of this type. They could hear the steady deluge flaying the dense leaves far above. Not a drop reached the ground.

"The trees won't hold it back forever," Abel remarked. "We'd better break out the pup tent in a hurry—"

"Hey!" Fritz Slaker's voice sang out ahead. "There's a ban-yan or something up here. Shelter!"

Columns of water hissed into the ground as the great leaves far above overflowed at last. The men galloped for cover, packs thumping as they dodged the sudden waterfalls.

THEY stripped their packs and broke out rations silently. The dry leaves and spongy loam made a comfortable seat, and after a day of hiking the relaxation was bliss. Tinnerman leaned back against the base of the nearest trunk, chewing and gazing up into the bole of the tree. It was dark; but he could make out a giant spherical opacity from which multiple stems projected downward, bending and swelling for a hundred feet until they touched the ground as trunks twelve feet in diameter.

Don Abel's voice came out of the shadow. "The monster passed right under here. I'm sitting on the edge of a print. What if it comes back?"

Slaker laughed, but not loudly. "Mebbe we're in its nest? We'd hear it. A critter like that—just the shaking of the ground would knock us all a foot into the air."

There was a sustained rustle.

"What are you doing?" Abel asked querulously.

"Making a bed," Slaker snapped.

"Do you think it's safe?" Abel asked, though his tone indicated that he suspected one place was as unsafe as another. After a moment, the rustle signified that he too was making a bed.

Tinnerman smiled in the dark, amused. He really did not know the other men well; the three had organized an AWOL party on the spur of the moment, knowing that the survey ship would be planetbound for several days.

The bark of the tree was thick and rubbery, and Tinnerman found it oddly comfortable. He put his ear against it, hearing a faint melodic humming that seemed to emanate from the interior. It was as though he was auditing the actual life-processes of the alien vegetation—although on this world, *he* was the alien—and this fascinated him.

The other two were soon asleep. Sitting there in silence, the absolute blackness of a strange world's umbra pressing against his eyeballs, Tinnerman realized that this outing, dangerous as it was, offered him a satisfaction he had seldom known. Slaker and Abel had accepted him for what he was not: one of the fellows.

Those footprints. Obviously

animal—yet so large. Would a pressure of a hundred pounds per square inch depress the earth that much? How much would the total creature weigh?

Tinnerman found his pack in the dark and rummaged for his miniature slide rule. The tiny numbers floresced as he set up his problem: 144 times the square of 4.5 times pi divided by 20. It came to about 460 tons per print. And how many feet did it have, and how much weight did each carry when at rest?

HE had heard that creatures substantially larger than the dinosaurs of ancient Earth could not exist on land. On an Earth type planet, which this one was with regard to gravity, atmosphere and climate, the limits were not so much biological as physical. A diminutive insect required many legs, not to support its weight, but to preserve balance. Brontosaurus, with legs many times as sturdy as those of an insect, even in proportion to its size, had to seek the swamp to ease the overbearing weight. A larger animal, in order to walk at all, would have to have disproportionately larger legs and feet. Mass cubed with increasing size while the cross section of the legs squared; to maintain a feasible ratio, most of the mass above a certain point would have to go to the feet.

Four hundred and sixty tons? The weight on each foot exceeded that of a family of whales. Bones should shatter and flesh tear free with every step.

The rain had ceased and the forest was quiet now. Tinnerman scraped up a belated bed of his own and lay down. But his mind refused to be pacified. Bright and clear and ominous the thoughts paraded, posing questions for which he had no answer. What thing had they blundered across?

A jumping animal! Tinnerman sat up, too excited to sleep. Like an overgrown snowshoe rabbit, he thought—bounding high, hundreds of feet to nip the lofty greenery, then landing with terrific impact. It could be quite small—less than a ton, perhaps, with one grossly splayed balancing foot. At night it might sail into a selected roost . . . or onto. . . .

He turned his eyes up to the impenetrable canopy above. In the flattened upper reaches of the banyan . . . a nest?

Tinnerman stood, moving silently away from the bodies of his companions. Locating his pack a second time he dug out cleats and hand spikes, fitting them to his body by feel. He found his trunk, shaping its firm curvature with both hands; then he began to ascent.

He climbed, digging the spikes

into the heavy bark and gaining altitude in the blackness. The surface gradually became softer, more even, but remained firm; if it were to pull away from the inner wood the fall would kill him. He felt the curvature increase and knew that the diameter of the trunk was shrinking; but still there was no light at all.

His muscles tensed as his body seemed to become heavier, more precariously exposed. Something was pulling him away from the trunk, weakening his purchase; but he could not yet circle any major portion of the column with his arms. Something was wrong; he would have to descend before being torn loose.

Relief washed over him as he realized the nature of the problem. He was near the top; the stem was bending in to join the main body of the tree, and he was on the underside. He worked his way to the outside and the strain eased; now gravity was pulling him into the trunk, helping him instead of leaving him hanging. Quickly he completed the ascent and stood at last against the massive nexus where limb melded into bole.

HERE there was light, a dim glow from overhead. He mounted the vast gnarled bulk, a globular shape thirty feet in diameter covered with swellings and scars. It was difficult to pic-

ture it as it was, a hundred feet above the ground, for nothing at all could be seen beyond its damp mound. Although it was part of a living or once-living thing, there was no evidence of foliage. There was no nest.

The center of the crude sphere rose onto another trunk or stalk, a column about ten feet in diameter, pointing straight up as far as he could see. He was not at the top at all. The bark here was smooth and not very thick; it would be difficult to scale, even with the cleats.

Tinnerman rested for about ten minutes, lying down and putting his ear to the wood. Again the melody of the interior came to him, gentle yet deep. It brought a vision of many layers, pulsing and interweaving; of tumescence and flow, rich sap in the fibers. There was life of a sort going on within, either of the tree or in it.

He stood and mounted the central stalk. Quickly he climbed, spikes penetrating at fingers, knees and toes, bearing him ant-like up the sheer column without hesitation. The light above became brighter, though it was only the lesser gloom of a starless night on a moonless planet. Ahead the straight trunk went on and on, narrowing but never branching. Huge limbs from neighboring trees crossed nearby, bare and eerie, residual mois-

ture shining dully; but his climb ignored them. Fifty feet; seventy-five; and now he was as high above the bole as it was above the ground. The stem to which he clung had diminished to a bare five foot diameter, but rose on toward the green upper forest.

Tinnerman's muscles bunched once more with strain. A wind came up; or perhaps he had come up to it. At this height, even the slightest tug and sway was alarming. He reached his arms around the shaft and hung on. Below, the spokes of other trees were a forest of their own, a fairyland of brush and blackness, crossing and recrossing, concealing everything except the slender reed he held. Above, the first leaves appeared, flat and heavy in the night. He climbed.

Suddenly it ended. The trunk, barely three feet through, expanded into a second bole shaped like an upsidedown pear with a five foot thickness, and stopped. Tinnerman clambered onto the top and stood there, letting his weary arms relax, balancing against the sway. There was nothing else—just a vegetable knob two hundred feet above the ground. All around, the dark verdure rustled in the breeze, and the gloom below was a quiet sea.

No branches approached within twenty feet of the knob, though the leaves closed in

above, diffusing the glow of the sky. Tinnerman studied the hollow around him, wondering what kept the growth away. Was this a takeoff point for the hidden quarry?

Then it came to him, unnerving him completely. Fear hammered inside him like a bottled demon; he dared not let it out. Shaking, he began the descent.

MORNING came, dim and unwilling; but it was not the wan light filtering down like sediment that woke the explorers. Nor was it the warmth of day, soaking into the tops and running down the trunks in the fashion of the night water.

They woke to sound: a distant din, as of a large animal tearing branches and crunching leaves. It was the first purposeful noise they had heard since entering the forest; as such, it was unnatural, and brought all three to their feet in alarm.

The evening deluge had eradicated all trace of the prints leading up to the giant structure under which they had taken shelter. Beneath it the spoor remained, as deep and fresh as before; one print near the edge was half gone.

Slaker sized up the situation immediately. "Guarantees the trail was fresh," he said. "We don't know whether it was coming or going, but it was made

between rains. Lets get over and spot that noise." He suited action to word and set off, pack dangling from one hand, half eaten space-ration in the other.

Abel was not so confident. "Fresh, yes—but we still don't know where the thing went. You don't look as though you got much sleep, Tinny."

Tinnerman didn't answer. They picked up their packs and followed Slaker, who was already almost out of sight.

They came up to him as he stood at the edge of an open space in the forest. Several mighty trees had fallen, and around their massive corpses myriad little shoots were reaching up. The sunlight streamed down here, intolerably bright after the obscurity underneath. The noise had stopped.

There was a motion in the bush ahead. A large body was moving through the thicket, just out of sight, coming toward them. A serpentine neck poked out of the copse, bearing a cactuslike head a foot in diameter. The head swung toward them, circularly machairodont, a ring of six-inch eye stalks extended.

The men froze, watching the creature. The head moved away, apparently losing its orientation in the silence. The neck was smooth and flexible, about ten feet in length; the body remained out of sight.

"Look at those teeth!" Slaker whispered fiercely. "That's our monster."

Immediately the head reacted, demonstrating acute hearing. It came forward rapidly, twenty feet above the ground; and in a moment the rest of the creature came into sight. The body was a globular mass about four feet across, mounted on a number of spindly legs. The creature walked with a peculiar caterpillar ripple, one ten-foot leg swinging around the body in a clockwise direction while the others were stationary, reminding Tinnerman of the problems of a wounded daddy-long-legs. The body spun, rotating with the legs; but the feet managed to make a kind of precessional progress. The spin did not appear to interfere with balance or orientation; the ring of eye-stalks kept all horizons covered.

Slaker whipped out his side-arm. "No!" Tinnerman cried, too late. Slaker's shot smacked into the central body, making a small but visible puncture.

THE creature halted as if nonplussed, legs rising and falling rhythmically in place. It did not fall. Slaker's second bullet tore into it, and his third, before Tinnerman wrested away the gun. "It wasn't attacking," he said, not knowing how to explain what he knew.

They watched while the monster's motion gradually slowed, huge drops of ichor welling from its wounds. It shuddered; then the legs began pounding the ground in short, violent steps, several at a time. Coordination was gone; slowly the body overbalanced and toppled. The great mouth opened like a flower, like a horn, and emitted an earshattering blast of sound, a tormented cry of pain and confusion; then the body fell heavily on its side.

For a moment the three men stood in silence, watching the death throes. The creature's legs writhed as though independently alive, and the head twisted savagely on the ground, knocking off the oddly brittle eye-stalks. Tinnerman's heart sank, for the killing had been pointless. If he had told the others his nighttime revelation—

From the forest came a blast of incredible volume. Tinnerman clapped both hands over his ears as the siren stridence deafened them with a power of twelve to fifteen bells.

It ended, leaving a wake of silence. It had been a call, similar to that of the creature just shot, but deeper and much louder. There was a larger monster in the forest, answering the call for help.

"Its mate?" Abel wondered out loud, his voice sounding thin.

"Its mother!" Tinnerman said succinctly. "And I think we'd better hide."

Slaker shrugged. "Bullets will stop it," he said.

Tinnerman and Abel forged into the brush without comment. Slaker stood his ground confidently, aiming his weapon in the general direction of the approaching footfalls.

Once more the fog-horn voice sounded, impossibly loud, forcing all three to cover their ears before drums shattered and brains turned to jelly. Slaker could be seen ahead, one arm wrapped around his head to protect both ears, the other waving the gun.

The ground shook. High foliage burst open and large trees swayed aside, their branches crashing to the ground. A shape vast beyond imagination thundered into the clearing.

For a moment it paused, a four legged monster a hundred feet high. Its low head was twelve feet thick, with a flat shiny snout. A broad eye opened, several feet across, casting about myopically. A ring of fibers sprouted, each pencil-thick, flexing slightly as the head moved.

Slaker fired.

The head shot forward, thudding into the ground thirty feet in front of him. The body moved, rotating grandly, as another member lifted and swung for-

ward. They were not heads, but feet! Five feet with eyes. The monster was a hugely sophisticated adult of the quinquepedalian species Slaker had killed.

THE man finally saw the futility of his stand, and ran. The towering giant followed, feet jarring the ground with rhythmic impacts, hoofs leaving nine-foot indents. It spun majestically, a dance of terrible gravity, pounding the brush and trees and dirt beneath it into nothingness. As each foot lifted, the heavy skin rolled back, uncovering the eye, and the sensory fibrils shot out. As each foot fell, the hide wrinkled closed, protecting the organs from the shock of impact.

The creature was slow, but its feet were fast. The fifth fall came down on the running figure, and Slaker was gone.

The quinquepedalian hesitated, one foot raised, searching. It was aware of them; it would not allow the killers of its child to escape. The eye roved, socketless, its glassy stare directed by a slow twisting of the foot. The circle of filaments combed the air, feeling for a sound or smell, or whatever trace of the fugitives they were adapted to detect.

After a few minutes the eye closed and the fibrils withdrew. The foot went high; plummeted.

The earth rocked with the force of the blow. It lifted again, to smash down a few feet over, leaving a tangent print.

After a dozen such stomps the creature reversed course and came back, making a second row ahead of the first. This, Tinnerman realized, was carpet-bombing; and the two men were directly in the swath.

If they ran, the five-footed nemesis would cut them down easily. If they stayed, it would get them anyway, unless one or both of them happened to be fortunate enough to fit into the diamond between four prints. The odds were negative. And quite possibly it would sense a near miss, and rectify the error with a small extra tap.

They waited, motionless, while it laid down another barrage, and another. Now it was within fifty feet, mechanically covering the area. Behind it a flat highway was developing.

Saturation stomping, Tinnerman thought, and found the concept insanely funny. Man discovers a unique five footed monster—the Quink—and it steps on him. Would the history books record the irony?

He saw the answer. He gave a cry and lurched to his feet, flinging his pack aside and plunging directly at the monster.

The foot halted, quite fast on the uptake, and rotated its eye

to cover him. It gathered itself, crashed down, an irresistible juggernaut. The earth jumped with its fury; but Tinnerman, running in an unexpected direction, had passed its arc.

He halted directly under the main body of the quinquepedalian. If his guess were correct, it would be unable to reach him there. It would have to move—and he would move with it.

Far above, the main body hovered, a black boulder suspended on toothpicks. Above that, he knew, the neck and head extended on into the sky. A head shaped like a pear—when its mouth was closed. The first foot turned inward, its eye bearing on him. It hung there, several feet above the ground, studying him with disquieting intelligence. It did not try to pin him. Balance, Tinnerman judged, was after all of paramount importance to a creature two hundred feet tall. If it lost its footing, the fall of its body would destroy it. So long as it kept three or four feet correctly positioned and firmly planted, it could not fall; but if it were to pull its members into too small a circle it could get into serious trouble. Several hundred tons are not lightly tossed about.

THE quinquepedalian moved. The feet swung clockwise, one at a time, striking the ground

with an elephantine touch. The bars of Tinnerman's cage lifted and fell, crushing the terrain with an almost musical beat; the body turned, gaining momentum. The feet on one side seemed to retreat; on the other they advanced, forcing him to walk rapidly to keep himself centered.

The pace increased. Now the feet landed just seconds apart, spinning the vast body forward. Tinnerman had to break into a run.

Small trees impeded his progress; every time he dodged around an obstruction, the hind feet gained. On an open plain he might have been able to outrun the monster; but now it had maneuvered him onto rough ground. If it didn't tire soon, it would have him. In time it could force him over a cliff that its own legs could straddle, or into a bog. Or it might forget him and go after Abel—and he would have to stay under it, not daring to place himself outside its circle. His respect for it mounted; he was in the eye of a hurricane, and would soon have to find some other place of safety.

Tinnerman studied the pattern of motion. At this velocity, the individual feet did not have time for more than peremptory adjustments; the maintenance of forward motion dictated an involved but predictable pattern. One foot had to vacate the spot

for the next; he was not sure whether two feet ever left the ground at the same time, but could see sharp limitations. If he were to cross a print just vacated—

He timed his approach and took off to the side, almost touching the ascending foot. It twisted in flight, its eye spotting him quickly; but it was unable to act immediately. It struck the ground far ahead, casting up debris with the force of its braking action, and the following member lifted in pursuit.

Tinnerman ran straight out at breakneck speed. He had underestimated Quink's versatility; the second foot went after him much more alertly than an ordinary nervous system should have permitted. In a creature of this size, many seconds should have elapsed before the brain assimilated the new information and decided upon a course of action; yet the feet seemed to react promptly with individual intelligence. This thing was far too large and far-flung for the operation of any effective nervous system—yet it operated most effectively.

The shadow of a leg passed over him, and Tinnerman thought for a detached moment that he had been caught. But the impact was twenty feet to his rear. The next one would get him, unless—

He cut sharply toward a medium large tree at the edge of the clearing. He dared not look; but he was sure the creature behind was milling in temporary confusion. It could not dodge as fast as he—he hoped.

He reached the tree and ducked behind its fifteen foot diameter, feeling safe for the moment.

QUINK brought up before the tree. One foot quested around the side, searching for him. He could see its enormously thick hoof, completely flat on the underside: polished steel, with a reddish tinge in the center. Probably natural coloration; but he thought of Slaker, and shuddered.

The wooden skin drew back, uncovering the eye. The ankle above the hoof widened, the skin bunching in a great roll. He knew now that it settled when the foot rested, coming down to make contact with the ground. He had rested against that swelling last night; he had climbed that leg. . . .

As though satisfied that it could not reach him so long as he hid behind the tree, the quinquepedalian paused for an odd shuffle. Tinnerman peeked around the trunk and saw the legs bunch together in a fashion that destroyed some previous theories, then spread out in a

trapezoidal formation. One foot hung near the tree, supporting no weight, and seemingly overbalancing the body somewhat. Then the near foot hefted itself high, swinging like a pendulum, and threw itself against the tree with resounding force.

The entire trunk reverberated with the blow, and a shower of twigs and leaves fluttered down from the upper reaches. The foot struck again, higher; again the tree quaked and loosed a larger fall of detritus. Tinnerman kept a cautious eye on it; he could be laid low by a comparatively small branch.

The single foot continued its attack, striking the tree regularly about fifty feet above the ground. At that height the foot was about the same diameter as the tree, and the weight behind it was formidable. Yet such action seemed pointless, because damage to the tree would not affect the man behind it.

Or was he underestimating Quink again?

The pounding ceased, and he poked his head cautiously around once more. Was the thing retreating? Somehow he did not expect it to give up easily; it had demonstrated too much savvy and determination for that. It was a remarkable animal, not only for its size.

Three legs stood in a tripod, while two came up simultaneous-

ly. Tinnerman's brow wrinkled; it did not seem possible for it to maintain its balance that way. But it was acting with assurance; it had something in mind.

The two feet rose, together, one held just above the other. In awe, Tinnerman watched the lofty body topple forward, unable to stand upright in such a position. Suddenly the two feet thrust forward with staggering power; the entire body rocked backward as they smashed into the tree. And this time the timber felt it. A gunshot explosion rent the air as the fibers of the trunk split and severed, wood splaying; and the large roots broke the ground like sea monsters as the entire tree hinged on its roots.

Now Tinnerman could see how the clearing had been formed. The parent opened a hole in the forest, so that the baby could feed on the little saplings. As the vegetation grew, so did the child, until tall enough to reach the foliage of full sized trees.

A few more blows would fell this one. Tinnerman waited for the next impact, then fled, hidden from view, he hoped, by the tilting trunk. The creature continued its attack, unaware that the real quarry had gone.

TINNERMAN picked up the trail, human prints this time. Abel should have escaped during

the distraction, and would be heading for the ship.

The mighty forest was quiet now, except for a slight rustle ahead. That would be Abel. Tinnerman moved without noise instinctively, disinclined to interrupt the medication of the great trees' eternal beauty. And knew that he was a fool, for the forest hardly cared, and the quinquepedalian, with all its decibels, would not worry about the distant patter of Human feet.

"Don," he called, not loudly. Abel turned at once, a smile on his face.

"Tinny! I'm glad you got away." He too was careful of his volume; probably the monster could not hear, but it was pointless to ask for trouble. "You seemed to know what you were doing. But I was afraid you had not made it. I would have waited for you if—"

"I know, Don." Abel was no coward; if there had been any way to help, he would have done so. When dealing with the quinquepedalian, loitering was futile and dangerous; the person involved either got away or he did not. The most practical recourse was to trek immediately for the ship, so that at least one person would live to tell the story.

"Ship takes off in twelve hours," Abel said, shaking his pack into greater comfort. "If we move right along, we can

make it in six hours. Can't be more than twenty miles."

"Going to make a full report, Don?" Tinnerman was uneasy, without being certain why.

"Fritz was killed," Abel said simply.

Tinnerman put out a hand and brought him to a stop. "We can't do it, Don."

Abel studied him with concern. "I'll give you a hand, if you got clipped. I thought you were O.K."

"I'm all right. Don, we killed that thing's baby. It did what any parent would do. If we report it, the captain will lift ship and fry it with the main jet."

"Code of space, Tinny. Anything that attacks a man—"

"It didn't attack. It came to the defense of its child. We don't have the right to sentence it."

Abel's eyes grew cold. "Fritz was my friend. I thought he was yours too. If I could have killed that monster myself, I'd have done it. You coming along?"

"Sorry, Don. I have no quarrel with you. But I can't let you report Quink to the captain."

Abel sized him up, then took off his pack. He didn't ask questions. "If that's the way it has to be," he said evenly.

DON ABEL was a slow man, cautious in his language and conservative in action. But he had never been mistaken for a

weakling. His fists were like lightning.

Tinnerman was knocked back by two blows to the chin and a roundhouse on the ear. He held back, parrying with his forearm; Abel landed a solid punch to the midriff, bringing down his guard, and followed that with a bruising smack directly on the mouth. Tinnerman feinted with his left, but got knocked off his feet with a body check before getting a chance to connect with his right.

He rolled over, grasping for the feet, and got lifted by a blinding knee to the chin. His head reeled with a red haze; and still the blows fell, pounding his head and neck, while Abel's foot stunned the large muscle of the thigh, aiming for the groin.

Tinnerman's reticence fell aside, and he began to fight. He bulled upward, ignoring the punishment, and flung his arms around the other man's waist. Abel retaliated with a double handed judo chop to the back of the neck; but he held on, linking his forearms in a bearhug, pulling forward. Abel took a fistful of hair, jerking Tinnerman's head from side to side; but slowly the hug lifted him off his feet.

Abel was free suddenly, using a body motion Tinnerman hadn't met before, and once again fists flew.

It took about fifteen minutes.

Abel finally lay panting on the ground, exhausted but conscious, while Tinnerman rummaged in the pack for first aid. "I knew you could take me," Abel said. "It had to be fast, or that damn endurance of yours would figure in. You ever been tired in your life, Tinny?"

Tinnerman handed him the sponge, to clean up the blood. "Last night I climbed the Quink," he said. "I stood on its head—and it never made a motion."

"Quink? Oh, you mean the monster." Abel sat up suddenly. "Are you trying to tell me—" A look of awe came over his face. "That thing with the legs, the big one—you mean we slept under—" He paused for more reflection. "Those tracks—it does figure. If it hadn't been so dark, we would have seen that the monster was still standing in them! That's why there were leaves under there, and a couple of prints from the front feet. It must have been asleep. . . ." His mind came belatedly to grips with the second problem. "You climbed it?"

Tinnerman nodded soberly. "It couldn't have slept through that. I used the spikes . . . I didn't catch on until I saw the way the leaves had been eaten around the head. All it had to do was open its mouth—but it let me go. Live and let live."

Abel came to his feet. "O.K., Charlie—we'll wait six hours before heading for the ship. That'll give us time to look this thing over. Don't get me wrong—I haven't made up my mind. I may still tell the captain . . . but not right away."

Tinnerman relaxed. "Let's see what we can learn," he said. He reassembled Abel's pack, then glanced up.

THE foot was there, poised with Damoclesian ponderosity fifteen feet above their heads. The eye was open, fibrils extended. The quinquepedalian had come upon them silently.

"Split!" Tinnerman yelled. The two men dived in opposite directions. Once more the ground bounced with concussion, as he raced for the nearest tree. He slid around it, safe for the moment.

A glance back showed the monster hauling its foot back into the air. Only half of Don Abel had made it to safety. Then the huge hoof hovered and dropped, and the grisly sight was gone. There was only another flat print in the earth.

Abel might have been fast enough, if he hadn't been weakened by the fight. Just as Slaker would have been more careful, had he been warned. The quinquepedalian was the agent; but Tinnerman knew that he was

the cause of the two deaths.

Now Quink approached the tree, spinning in her stately dance, hoofs kissing the shadowed ground without a sound. She stood.

Why hadn't she crushed them both as they fought, oblivious to the danger above? She must have been there for several minutes, watching, listening. One gentle stomp, and vengeance would have been complete. Why had she waited?

Fair play?

Was this thing really intelligent? Did it have ethics of its own—her own?

The familiar foot came around the trunk, perceptors out. He stood calmly, knowing that he was safe from immediate harm. He stooped to pick up a handful of dirt, tossing it at the light sensitive area. The eye folded shut immediately, letting the earth rattle over the bare hide. Fast reflexes.

Too fast. An animal of this size had to be handicapped by the distance between brain and appendages. It was manifestly impossible to have an instantaneous reflex at the end of a limb one hundred feet long. No neural track could provide anything like the speed he had witnessed.

Tinnerman moved to the other side of the trunk, as though getting ready for a dash to another tree. The foot swung around at

once, intercepting him from the other direction, there was no doubt that it learned from experience, and could act on it immediately.

But how could that impulse travel from eye to brain and back again so quickly? Usually, an animal's eye was situated quite close to the brain, to cut down neural delay. Unless Quink had a brain in her foot—

The answer struck him stunningly. There *was* a brain in the foot. There had to be. How else could the pedal members be placed so accurately, while maintaining perfect balance? There would be a coordinating ganglia in the central body, issuing general orders concerning overall motion and order of precedence for the lifting of the feet; there could be another small brain in the head, to handle ingestion and vocalization. And each foot would make its own decisions as to exact placement and manner of descent. Seven brains in all—organized into a mighty whole.

The foot-brains could sleep when not on duty, firmly planted in the ground and covered by a thick overlap of impervious skin. They were probably not too bright as individuals—their job was specialized—but with the far more powerful central brain to back them up, any part of Quink was intelligent.

(continued on page 180)



THE SPECTROSCOPE

By S. E. COTTS

Explorers of the Infinite. By Sam Moskowitz. 353 pp. World Publishing Co. \$6.00

Better late than never comes my review of Sam Moskowitz's non-fiction work, *Explorers of the Infinite*, parts of which previously appeared in *AMAZING* and *FANTASTIC*. This is a long book, not to be digested in one sitting if for no other reason than to show respect for the voluminous amount of work it represents. There are eighteen profiles devoted to the earlier innovators and their singular contributions to science fiction. Among the eighteen are the most well-known, such as Jules Verne, H. G. Wells, Edgar Rice Burroughs, Hugo Gernsback, H. P. Lovecraft, Olaf Stapledon, Karel Capek and Stanley Weinbaum. Also included are names that will surprise some of the less well-read audience—Edgar Allen Poe, Arthur Conan Doyle, Cyrano de Bergerac. In addition to these

eighteen portraits, there are two final chapters. In the first, the author gives a run-down of the emergence of science fiction magazines along with showing how the term "science fiction" came to be applied to writing of this nature. The final chapter deals briefly with the main writers who have worked in the field since the big science fiction boom of the late 1930's.

There is a good deal that is wrong with the book, but before I go into these "cons," I want to make it clear that they cannot detract from the overall value of this work and Mr. Moskowitz deserves everyone's thanks for doing a job the very presence of which serves to point out the vacuum that exists as far as material of this kind goes. It is an historically valuable collection, if not an incisive one, and even after a more definitive work is written, it will remain a respected reference source.

First of all, in general, the book could have been vastly improved by a little pruning. Though I am glad to see that World Publishers didn't constrict him with space limitations, I am afraid the \$6.00 price tag will prevent wide-spread circulation. What takes up all this space? In the interests of thoroughness, Mr. Moskowitz has seen fit to mention, complete with all pertinent data, nearly each and every S-F work of each of his eighteen authors. Of course, this makes for completeness, but it also makes for a style more appropriate for a book catalogue than a meaty essay. We are presented with paragraph after paragraph of story synopses plus dates and other relevant data, but sometimes only a sentence or so on each writer's contribution scattered throughout all the rest. (For example, in a fifteen-page chapter on Poe, there are only three sentences near the end that tell what Poe's real contribution to science fiction is—not any particular story so much as his continual insistence that "every departure from the norm must be logically and scientifically explained.") Perhaps a more successful and interesting approach would have been to discuss one or two of each author's best works at greater length and then have an annotated bibliography at the end of

each chapter listing the others for completeness' sake. Even if this approach were not used, a bibliography is sorely missed (though I'm grateful for an index which is included). It would help to satisfy the reader's curiosity about some of Mr. Moskowitz's more interesting matter, which is in the form of quotes or other material from contemporaries who knew each author. These furnish, in several cases, fascinating sidelights as well as welcome documentation, e.g., a quote from a magazine in 1823 concerning Mary Shelley's authorship of FRANKENSTEIN; or some light on the personality of Luis P. Senarens, alias Frank Reade, Jr., which was furnished by his two children.

Another aspect of Mr. Moskowitz's book which must be brought out (and which might have been helped by more research of the kind just praised) is the paucity of material relating to how each author himself looked upon the science fiction side of his activities. This omission is not so serious when the subject is one like Hugo Gernsback, who is Mr. S-F personified. But it is serious in the case of a writer whose S-F activities were only a portion of his output, as in the case of Poe. For instance, Mr. Moskowitz states, "His [Poe's] preoccupation with science fiction was not a literary

accident. Neither was it an outgrowth of financial necessity. It was undeniably what he wanted to write." This is really a meaningless statement, since it is one that could be applied to the great bulk of all artistic endeavor. Most writers want to write what they write. (And as for anything being a "literary accident"—the very term is contradictory. Any writing, no matter how poor, involves a certain amount of thought and effort even to set it down on paper, and as such could hardly be considered "accidental.") No, the valuable thing to find out here is *why* he wanted to write science fiction. He could have looked upon it as a kind of relaxation or escape, a way to have fun after the morbidities of his psychological thrillers, such as Graham Greene today writes his spy stories which he himself refers to as "entertainments," after the rigors of his serious moral/religious/theological novels. On the other hand, Poe could have written his science fiction works not as a different genre of conscious science stories but merely as the other side of the coin to his horror stories. His overwhelming trait in all his works is analysis, and it would seem natural that he should apply this tendency to phenomena, both of the inner self and the outer world.

Or let us look at it another

way. If a well known serious painter decides to do a few dress designs (assuming that this is not motivated by considerations of money), it would seem of first importance to find out why he did the dress designs *before* writing a serious monologue on that phase of his activity as isolated from his serious painting. He might have done the designs on a dare or for a joke or to relax or because his mother had nothing to wear. Of course he wanted to do them, or he wouldn't have bothered. The main thing is *why*. All of which brings into question whether it is valid to discuss a particular portion of a writer's work (ranging from a small to a considerable percentage of the total) isolated from the rest. Fortunately, Mr. Moskowitz has offset this serious question a bit by interspersing his essays with biographical material, and setting his whole product against a background, though often very sketchy, of the spirit and atmosphere of each author's period.

Something else that I miss in the book is the use of brickbats, or at least an occasional rest from the attitude of taking each author so admiringly, so seriously, and making each so all-fired important. In bending over backward to be nice to everyone, too little of Mr. Moskowitz's own personality comes through. No one likes to eat sweets all the

time. Though his treatment is far from superficial, the book lacks the penetration of the first-rate essayist. For a model of the type of dash he needs I would nominate D. H. Lawrence's *Studies in Classic American Literature*. This book consists of brief essays, each on a different American author, and each detailing enough of his books to give the reader a good idea of trends. But where Moskowitz is admiring, Lawrence is caustic, where Moskowitz is cautious, Lawrence is daring. So that on finishing the Lawrence, one has an idea of his own personality as well as the author's, and though Lawrence can be disagreed with again and again, the book has an unmistakable stamp—it is never dull. Mr. Moskowitz contents himself with facts rather than ideas.

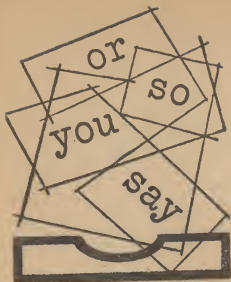
Before I close, there is another interesting comparison to make. Mr. Moskowitz ends his book with a plea for S-F to regain its old role after what he feels is the stasis of the fifties, with its greater emphasis on literary quality rather than science. He also earmarks as one of his dislikes what he refers to as documentary science fiction—the first man on the moon, etc. He looks forward to when science fiction will again present new scientific concepts with their concomitant consequences. This is the closest

that the author comes to putting *himself* in the book, and how things perk up when he does. (Now the trick is to learn to do the same when dealing with his profiles.) For the first time in the book, he furnishes the reader substance with which to argue, not just methodology to criticize. I am not going to agree or disagree with Mr. Moskowitz about this viewpoint. I don't have to, since he already has another opponent. Kingsley Amis, in *New Maps of Hell* (which you remember I felt also suffered from a surfeit of names and titles), is happy *because* science fiction has finally become really literate after shedding its pretension and sensationalism.

So there you have it. One cannot make the simplest statement without having someone else pop up like a jack-in-the-box to disagree.

SPECIAL NOTE:

Also in the news is a handsome hardcover reprinting of *I, Robot*, by Isaac Asimov. This set of nine related robot tales hasn't been available for a while, and it is a very welcome sight. There are not too many science fiction works which deserve the label, "classic" (a designation used far too often and too carelessly), but this is certainly one. It's published by Doubleday and the price is \$3.50.



Dear Miss Goldsmith:

Every now and then you publish letters deploring the death of the old free-for-all clashes between readers. These letters usually receive no reply (in the lettercol anyway) or else any controversy is immediately squelched; the latest example is the pair of letters about the quality of modern sf heroes.

As a loyal reader, I would like to know why there aren't any more feuds. Apparently, it's against the editorial policy. Why is this? Are you afraid of lawsuits? Do you fear boring or offending the readers? Or do you just not get any good letters from fandom? If you get the letters and don't publish them, there's really not much point in us writing spicy letters, or in

publishing letters at all. Nobody wants to know how Urchison Flugg Meeble, Tenn likes the magazine. We want to know what he thinks, whether he has any new ideas.

Simon A. Stricklen Jr.
Box 1030 Rt. 2
Augusta, Georgia

• *The problem, gentlemen, lies with fandom. We first don't get enough letters with provocative, good, or kookie ideas. Where are the nonconformists?*

Dear Editor:

Well, your September issue started off with a dern good cover by Birmingham. Please don't start off on another one of those Birmingham space covers kicks—if there's anything I hate it's one of those covers. Let's keep Birmingham down on the ground, like on the March issue.

"Homo Aquaticus" was a very good story, but the conclusion to it was rather obvious by the title of it. Still, I'm not knocking it for that. And Robert F. Young's story was completely charming. But best of all was "The Winds of If." This was superb! Magnificent! Completely intriguing! And I mean wonderful! This is one of the best novels that I have ever seen grace your pages, and I've seen pretty many.

AMAZING is my favorite maga-

zine because of two reasons. One, you almost always have consistently good stories. Two, you have remained a monthly for a long time and your format is good.

Paul Gilster
42 Goodwin Lane
St. Louis, Mo.

● *Down, Birmingham! Down, boy, I say!*

Dear Editor:

I decided to sit down immediately and write you a letter concerning the August AMAZING. Daniel F. Galouye's two recent novellas, "Recovery Area" and "Reign of the Telepuppets," are undoubtedly two of the finest stories you have published so far this decade.

"Utopia? Never!" is the kind of short I like. John Rackham's story was okay, but a better duplicated-man yarn is Richard Wilson's "The Ubiquitous You" in his latest collection. "The Lesson for Today" was readable but "Mine Is the Kingdom" wasn't.

The SF Profile was great, very interesting. I didn't know that Campbell's writing career was so short. But he surely made a mark as an author.

Has anybody thought of any "SF Tom Swifties" yet? I don't read many fanzines, so this could be a big thing in fandom and I wouldn't know about it. Anyway, I have a pertinent Swiftie

you might be interested in: "I'd like to know what Bunch's 'Mod-eran' stories are about," he said tinnily.

Bill Ameen
Route 1, Box 537
Jamestown, N.C.

● *I suppose we'll have to have some SF Swifties. How about: "So you really expected to find canals on our planet?" The Martian said dryly.*

Dear Cele:

I cannot refrain any longer from writing about David R. Bunch, the incurable romanticist. You may take nauseating old Harrison Denmark, rude, stark Roger Zelazny but Bunch is, or can be, a truly great writer. His stories are just a bit apart from reality but come much closer to the Truth than most realists.

Bunch, Young, Galouye, Anthony (Piers), Simonds, Shark-ey, Ballard and all the other great contributors to AMAZING comprise the most talented roster of any of the sf magazines.

Jeff Rensch
Palo Verdes Estates,
California

● *There's that old question of what reality is really real. We think Bunch's flesh-strip people and his featureless "places" are probably pretty close to home right now.*



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QUINQUEPEDALIAN

(continued from page 121)

"Creature of the forest," Tinerman said to it in wonder. "Quinquepedalian, septecerebrian—you are probably smarter than I." And certainly stronger. He thought about that, discovering a weird pleasure in the contemplation of it. All his life he had remained aloof from his fellows, searching for something he could honestly look up to. Now he had found it.

ELEVEN hours later, on schedule, the ship took off. It would be three, four, five years before a squat colony ship came to set up frontier operations.

Quink was stalking him with ageless determination and rapidly increasing sagacity. Already she had learned to anticipate the geometric patterns he traced. He had led her through a simple square, triangle and star, giving up each figure when she solved it and set her body to intercept him ahead. Soon she would come to the conclusion that the prey was something more than a vicious rodent. Once she realized that she was dealing

with intelligence, communication could begin.

Perhaps in time she would forgive him for the death of her child, and know that vengeance had been doubly extracted already. The time might come when he could walk in the open once more and not be afraid of a foot. At night, while she slept, he was safe; but by day—

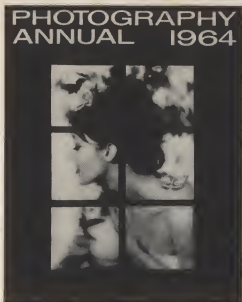
Perhaps, when the colonists came, they would be greeted by a man riding the mightiest steed of all time. Or by the quinquepedalian, carrying its pet. It did not matter who was ascendant, so long as the liason was established.

"Creature of the forest," he said again, doubling back as he perceived her bulk in wait at an intersection of the triquetra pattern. For a moment he stood and looked at her, so vast and beautiful, spinning in the dance of his destruction. "Creature of the forest," he said, "Thou art mighty.

"Thou art mightier than I." There was an answering blast bells in magnitude, like a goddess awakening beyond the horizon.

THE END

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"THE SAVAGE beast screamed in rage and tried to scramble into the tree after O-aa; but the limb he seized was too small . . . Rahna rushed in and bit him, and then leaped away."

see SAVAGE PELLUCIDAR

